STEEL

The

Metalworking Weekly

MAY 2, 1960

A PENTON PUBLICATION

JAMES D. McLEAN
President
Stromberg-Carlson Div.
General Dynamics Corp.

Solid Sales Base Bolsters Optimism

On a coast-to-coast air safari, STEEL editors are asking metalworking executives: "How's business?"

Mr. McLean's comments on his firm's activities sum up conditions the editors found in Eastern U. S., the first leg of their safari.

"We expect a moderate but steady gain through at least the next few months. Competition is becoming more intense, every manufacturer is under severe pressure to reduce costs and improve service."

Stromberg-Carlson's sales are about 30 per cent ahead of 1959's. Demand is improving for both its industrial and consumer products.

Not all firms are experiencing an upturn—but the editors found few executives who were not optimistic. You can get a first hand report on business from their comments on Page 33.

STEEL's Editor Warns Congress On Foreign Competition Threat

Your Stake in the Railroad Dilemma

Subzero Machining Aids Tool Life

Fight for It with Depreciation Reform

No. 9 in STEEL's Program for Management

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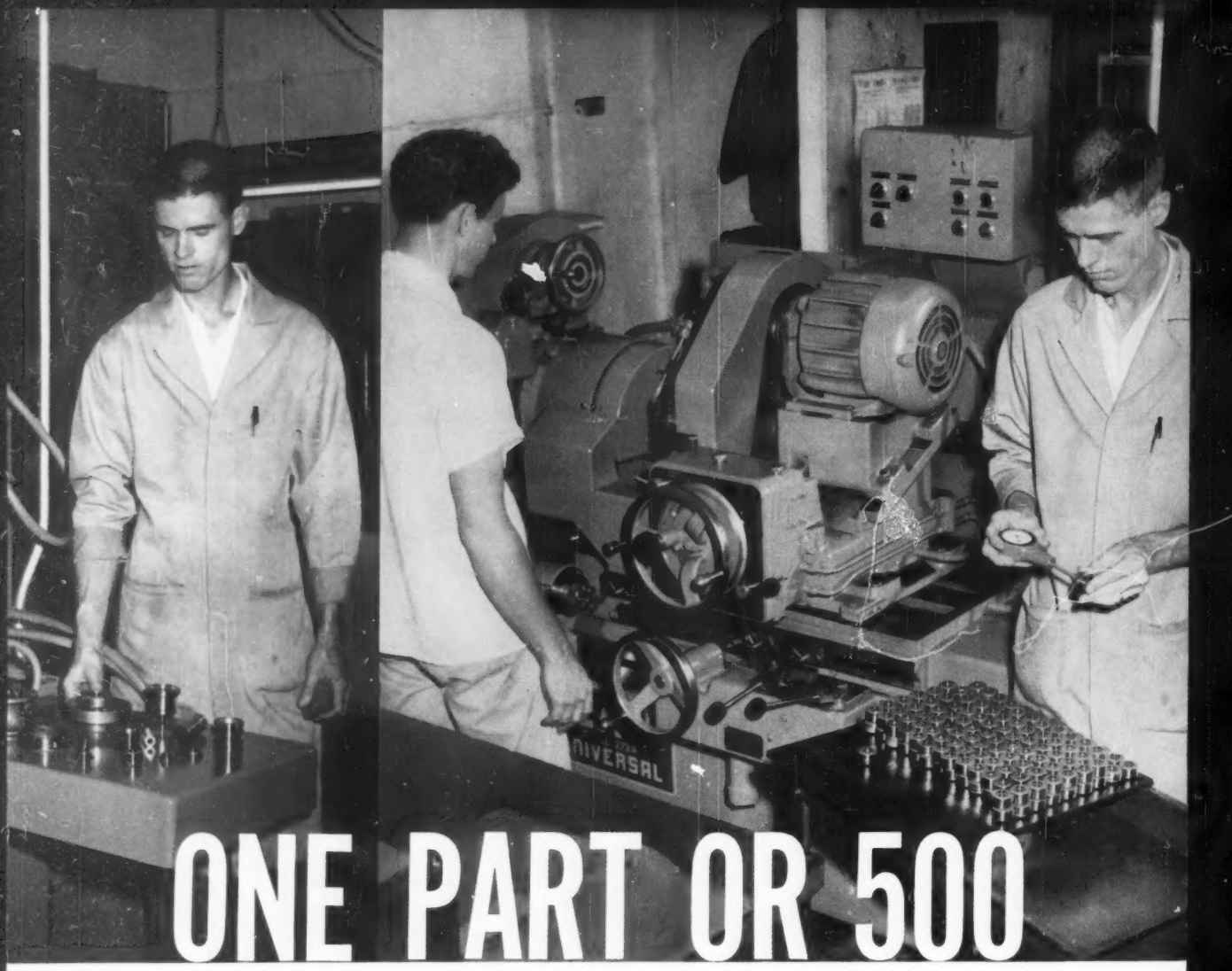

ONE PART OR 500

Selco gets top grinding performance at rock-bottom cost with the

NEW HEALD MODEL 273A UNIVERSAL

The Heald Model 273A Universal Internal Grinder shown above is installed at the Selco Grinding Company — a small but busy job shop in southern California. Here it is used to grind straight or tapered I.D.s and O.D.s, and for rotary surface grinding of flat, convex or concave surfaces of a wide range of work — from individual parts to production runs. And it easily handles every job with far greater speed, accuracy, precision and finer finish than could be obtained on any of their previous equipment.

Until the advent of this Universal Grinder, most small job shops (and many larger ones, too) couldn't afford a machine of this type. But the Heald 273A costs about *half* as much as comparable machines today, and less than similar machines (with fewer features) cost in 1947!

Incorporating the latest advances in the grinding art, it holds tolerances to within .0001″ in routine production, and within .000050″ in special cases. Features include hydrostatic antifriction ways, full 20″ table travel, several wheelhead positions, infinitely variable workhead speed from 150 to 450 rpm and 90 degree workhead swivel for rotary surface grinding.

Ask your Heald engineer for information on the New 273A — the only completely new machine with 1960 performance and a 1947 price tag.

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

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Chicago • Cleveland • Dayton • Detroit • Indianapolis • Lansing • New York • Philadelphia • Syracuse

HEALD

It PAYS To Come To Heald

This Week in STEEL

The Metalworking Weekly

May 2, 1960 Vol. 146 No. 18

Editor Warns Congress on Foreign Competition

"Unless checked, the rising tide of U. S. imports and our loss of exports can make us a 'has been' nation." That warning was voiced last week by Walter J. Campbell, editor of STEEL, before a Congressional subcommittee. He urges a restoration of balances to give American metalworking and metal producing industries a fair shake in world markets. PAGE 23

Your Stake in the Railroad Dilemma

Although expenditures by the railroads will continue the upturn begun last year, total spending will not equal that of 1950. (Outlays for iron and steel materials and supplies will fail to equal the 1923 level for the third year in a row.) This metalworking market, with a potential of more than $2 billion a year, is "faced with labor, depreciation, subsidy, diversification and regulation problems," says Daniel P. Loomis, president of the Association of American Railroads. Some of the rails' roadblocks face all U. S. industry, including metalworking. PAGE 36

Production Efficiency Calls for Depreciation Reform

Thorough reform of federal policies, which force us to under-depreciate to the tune of $6 billion a year, is probably dead this year. We can improve our chances for action in 1961 if we: Take advantage of partial reforms now; reach greater unanimity on what we want for full reform; and sell the urgency of the problem to Congress and the administration. PAGE 43

Shake Deburring Rings Up Savings

National Cash Register Co., Dayton, Ohio, uses the method on small, delicate parts to produce better components at a saving. On one bearing, NCR is saving $22,600 a year in deburring costs. PAGE 70

Subzero Machining Aids Tool Life

The flood coolant pouring from these nozzles at −76° F can produce big changes in cutting tool life. Coolants at subzero temperatures keep tool-weakening heat away from the cutting edge. In an attack on the problem of temperature at the tool-chip interface, aircraft engineers at Convair Div., General Dynamics Corp., and in the Air Materiel Command researched the advantages and disadvantages of cold machining several alloys. PAGE 66

Metal Buying Pendulum Swings to Normal

Purchasing agents have ended their metal inventory buildup and are again gearing purchases to consumption. More than 34 per cent of the respondents to STEEL's quarterly survey see stocks falling by the end of the third quarter. About 83 per cent have more than 30 day supplies and 40 per cent report overstocks of at least one item. PAGE 97

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KNOW YOUR ALLOY STEELS . . .

This is one of a series of advertisements dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

Normalizing Alloy Steels

There are several forms of heat-treatment commonly employed in the processing of alloy steels. Each in its own way modifies the mechanical properties and structures of steel, and each is chosen with a definite objective in mind. The five usual forms of treatment are normalizing, annealing, spheroidize-annealing, quenching and tempering, and stress-relieving.

In this particular discussion, let us consider briefly the purposes and effects of normalizing.

Normalizing is an operation in which the steel is heated to approximately 100 deg F above the upper transformation range, then cooled in still or agitated air. The basic purpose is to refine the prior structure produced by variations in finishing temperatures encountered in rolling or forging. The structure resulting from normalizing, being more uniform, will help create improved mechanical properties when the steel is subsequently reheated, liquid-quenched, and tempered.

There are times when large steel parts (heavy forgings, for example) cannot be liquid-quenched because of their size. In cases of this nature, the heat-treatment must consist of single or multiple normalizing followed by tempering.

High-temperature normalizing is sometimes used for grain-coarsening low-carbon alloy steels to promote machinability. (In high-temperature normalizing, steel is heated to more than 100 deg F above the upper transformation range.) At times it is possible to machine a steel in the air-cooled condition, the governing factor being the alloy content. However, the highly alloyed analyses may require annealing or tempering after normalizing, to decrease the hardness.

It is essential, when normalizing is employed, that free circulation of still or agitated air be provided. When air-cooling of individual bars or forgings is not practicable, the furnace charge should provide for some means of separation, such as racks or spacers.

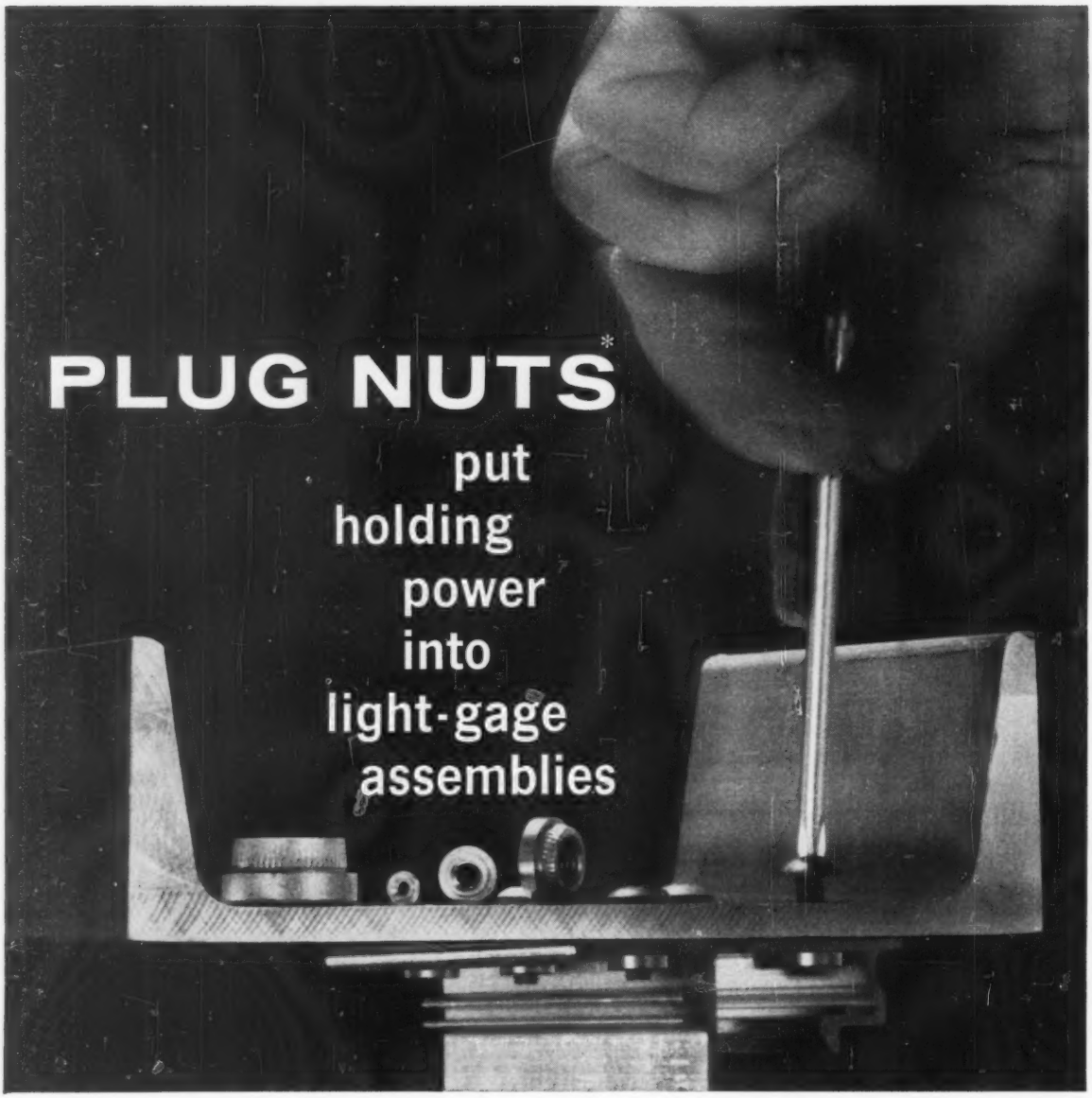
If you would care to know more about normalizing, or any other phase of heat-treating, you are invited to consult with Bethlehem metallurgists. They are always glad to give you any help you need.

And remember that Bethlehem makes the full range of AISI standard alloy steels, as well as special-analysis steels and all carbon grades.

This series of alloy steel advertisements is now available as a compact booklet, "Quick Facts about Alloy Steels." If you would like a free copy, please address your request to Publications Department, Bethlehem Steel Company, Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

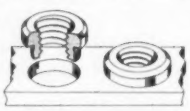


Think of Plug Nuts as "portable tapped holes". Consider using them when you're faced with problems such as thread stripping, hole enlargement, loss of bolt tension, blind fastening, tight clearance. Assembly bottlenecks? Plug Nuts can be installed *before* many forming and finishing operations.

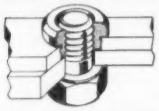
Current applications include instrument cabinets, cargo vans, metal window hardware, curtain walls. Give you any ideas?

Plug Nuts are made for use in any thickness of material down to .030" and in any tap size from #4 to ¾". You can have them in case hardened steel, brass, various grades of stainless and aluminum in a full range of finishes. Write us for samples and descriptive literature.

*Patented



Plug Nut is easily seated with hand punch or small press. Positive clinching occurs when displaced hole material flows into knurls and annular groove.



Plug Nut does not affect flatness of product material, nor does it project through. Low profile head is a real advantage where clearance is tight.

LAMSON & SESSIONS

5000 TIEDEMAN ROAD • CLEVELAND 9, OHIO

Plants in Cleveland and Kent, Ohio • Chicago and Birmingham

Just a little

Vancoram Ferrovanadium does such a big job! Vancoram Ferrovanadium does an outstanding job in a surprisingly economical way! In constructional steels, tool and die steels, deep-drawing steels, cast and forged steels, and in cast irons, no other alloying element is so versatile. It readily forms stable carbides and controls grain growth. In cast irons it is unusually effective in restraining graphitization. Vanadium imparts toughness, durability, strength and resistance to wear. Try it and see!

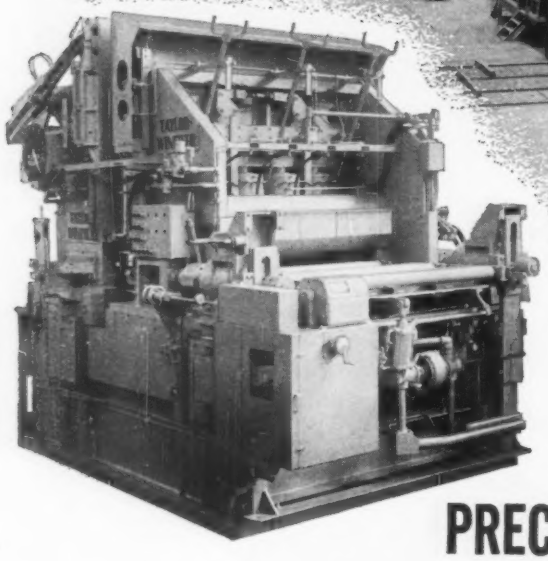
Call or write your nearest VCA District Office or VCA distributor for the whole story. Vanadium Corporation of America, 420 Lexington Avenue, New York 17, N. Y. • Chicago • Cleveland • Detroit • Pittsburgh

VCA Products are distributed by: Pacific Metals Company, Ltd.; Steel Sales Corporation; J. M. Tull Metal and Supply Company, Inc.; Whitehead Metals, Inc.; Williams and Company, Inc.

Be sure to visit our Booth (No. 1414) at the AFS Castings Congress, Philadelphia, May 9-13.

VANADIUM
CORPORATION OF AMERICA
Producers of alloys, metals and chemicals

VANCORAM



in Inland Steel's No. 3 cold mill...

S-C VALVES PROVIDE PRECISE, DEPENDABLE CONTROL

of Taylor-Winfield flash-butt strip welder

Uninterrupted, high speed production of strip steel in Inland's new No. 3 cold mill is assured by the performance of Inland's Taylor-Winfield flash-butt strip welder in the pickle line.

Accurate control of the water hydraulic system actuating the welder's spacer bar and die cleaner, platen and clamping cylinders, and the hydraulic power supply pump by-passes is provided by piloted Sinclair-Collins diaphragm-operated control valves, handling working pressures up to 1,000 psi. A cam-controlled, modified S-C 4-way lever valve regulates critical burn-off and flash rates with consistent precision. Two S-C diaphragm-actuated valves, mounted end-to-end on a common bonnet, afford near-instantaneous maximum flow of high-pressure fluid to supply the massive, rapid upsetting action required for a sound weld in the strip, ranging to .187 x 63 inches in section.

Sinclair-Collins valves, offered in a variety of types and sizes to 3 in. NPT, for low, medium and high pressure service to 6000 psi, could be the answer to your fluid control problems. Designed for oil, air, steam and hot or cold *raw* water service, flange or screw mounted, S-C valves assure leak-free performance . . . resistance to corrosion. The Stellite seats in S-C valves eliminate wire drawing, cutting and costly downtime. For detailed information on S-C valves, contact the S-C representative, the S-C field office nearest you, or call one of the Bellows or Valvair field offices, located in over 80 major industrial cities.

For more information, write for Bulletin SC-59. Address Dept. ST-560, The Sinclair-Collins Valve Company, 454 Morgan Ave., Akron 11, Ohio.

The SINCLAIR-COLLINS VALVE Co.

AKRON, OHIO

DIVISION OF INTERNATIONAL BASIC ECONOMY CORPORATION (IBEC)

Other INDUSTRIAL DIVISIONS of IBEC: The Bellows Co., Akron, Ohio
Valvair, Akron, Ohio • V. D. Anderson Co., Cleveland, Ohio

8832

Singer Sells a Sultan

The assistant manager of Singer Mfg. Co.'s agency in Addis Ababa, Ethiopia, is Aime Zara. He recently toured the back country visiting sewing machine customers and agents. His route took him through Assaita, capital of the Dankali desert region. It is considered the most dangerous district in Ethiopia and is seldom visited by foreigners. Almost every man of the 40,000 Dankali population is a nomad, and goes around armed to the teeth eying strangers with suspicion.

However, dauntless Mr. Zara (left) not only went into the area and completed his rounds, but paid a call on the sultan (center) of Dankali. After the Singer man explained his business in an acceptable manner (it's a good thing he did), he not only got his picture taken with the sultan, but sold him two sewing machines.

This is all by way of showing you how Singer carries out a portion of its ten pronged attack on 156 world markets—from Aden to Zanzibar. For the complete story, see Associate Editor George Howick's account next week.

P.S. The guy at the right in the photo is the sultan's peripatetic persuader . . . or dissuader, as the case may be.

Mr. Campbell Goes to Congress

From his office on the top floor of the Penton Building, Editor Walt Campbell has an excellent view of Cleveland's waterfront, especially since the St. Lawrence Seaway opened. He looks down on ships unloading steel, fasteners, machine tools, and a multitude of low cost metalworking products coming out of revitalized foreign economies.

He has seen those products translated into jobs, world markets, and taxes lost to the U. S.

Of course, the threat of foreign competition has been examined many times in the pages of STEEL. For example, our 1960 Program for Management on Production and Materials Efficiency was initiated to help U. S. companies offset the cost advantages enjoyed by their foreign counterparts.

As a result of STEEL's coverage of foreign competition, Walt was invited to testify last week before the House Appropriations Subcommittee on Foreign Operations, of which Rep. Otto E. Passman (D., La.) is chairman. Walt appeared under the auspices of Walter Harnischfeger, national chairman, and Willard F. Rockwell, committeeman, Citizens Foreign Aid Committee. You can find an account of his testimony some pages to the East of here.

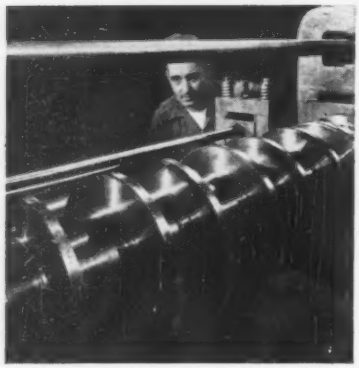
The Thing

Remember the song that went: "You'll never get rid of the bumpty-bump, no matter what you do . . . ?" The ditty could be hummed by Kaiser Aluminum & Chemical Sales Inc.'s salesmen when they hand out their aluminum calling cards. The men allow as how the cards are real attention getters, and they claim: "Nobody tears up these cards—they're too tough."

We got to chewing over the advantages brick salesmen or steel beam reps might have, but the thoughts became ridiculous. Anyhow—our congratulations to Kaiser for good merchandising.

Editors Launch Coast To Coast Air Safari

Embarking on the eastern leg of STEEL's air safari are Associate Editor George Howick (left) and News Editor Bill Dean, caught by our cameraman when they boarded a limousine bound for Cleveland's air terminal. Those two, and a number of other editors, are covering four sectors



Yoder Rotary Slitters reduce inventory... speed production

To help meet the demands of tight production schedules, YODER Slitters reduce mill-width stock quickly and economically to desired widths. If your needs are as low as 100 tons per month, time and manpower savings alone will offset the cost of your YODER Slitter in a matter of months, while reducing basic inventories. Compactly designed, standard YODER Slitters are built to handle standard coil widths... completely engineered lines for special requirements.

YODER accessories, such as coil cars, swivel unloaders, scrap choppers, scrap disposers, plate levelers and coil boxes, make stock handling fast and easy.

YODER also makes a complete line of Cold Roll-Forming equipment and Pipe and Tube Mills. To profit from YODER'S years of engineering and service experience, contact your local YODER representative or send for the YODER Slitter Manual.

Investigate the many advantages of YODER-engineered Slitter Installations. Write today for this comprehensive, 80 page YODER Slitter Manual... it's yours for the asking!

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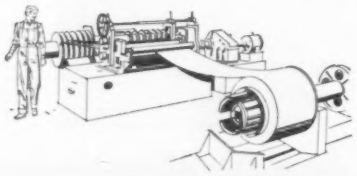

ENGINEERING YODER MANUFACTURING
ROTARY SLITTING LINES

of the U. S.: East Coast, Midwest, West Coast, and the South.

Assignment: Check the business pulse with industrial leaders throughout the nation.

The question: Is the economy in an up phase, down phase, or holding steady?

We did some checking on the swings which occurred in the economy during the April-December periods since 1896. Result: In seven years out of ten, industrial production climbed or remained static.

You'll learn about the current outlook if you flip the pages to our news section. The reports from the field start there.

She Beats the Deadline

One of our favorite correspondents is Mrs. Walt (Charlsie) Vunovic, formerly a secretary in the works manager's office at General Steel Castings Corp., Granite City, Ill. Charlsie announced via the Feb. 8 Servicenter, that she was expecting a baby during National Secretaries Week. As all good secretaries do, she completed the assignment a week ahead of schedule. Just for the record, the Vunovics' daughter, Carol Lynn, was born Apr. 16.

Here Are the Steps to $1000

This month marks the opening of our fourth Usership Idea of the Month contest. Our February winner, Ernest J. Hills, senior engineer, Radio Corp. of America, Lancaster, Pa., walked off with a $500 prize by telling us how he expects to use superalloy spring wires which were advertised and written about in February issues of STEEL. (See last week's Servicenter for details.) Mr. Hills will collect an additional $500 if he successfully accomplishes his objective within six months.

The judges are busy selecting the winner of our March contest, which closed May 1. The April contest runs until June 1 and the May contest until July 1. It's easy to enter.

Tell us, in 300 words or less, how you plan to USE an article or advertisement in this issue (or any other issue published this month—May, 1960) to help you accomplish an important personal or company objective. Be as specific as you can. If, in the opinion of the judges, yours is the best idea submitted—**you will win $500.**

You will win an additional $500 if you furnish written proof that you were successful in accomplishing your objective. Proof must be submitted within six months after you are declared winner of STEEL's Usership Idea of the Month Award.

You can enter as many times as you wish. Please identify your letters as Usership entries. They will be judged by a committee of STEEL's editors. All letters become STEEL's property. Send your entries to me, Ed Service, Servicenter, STEEL, 1213 W. Third St., Cleveland 13, Ohio.

THE TONY ACCETTA "PET" SPOON, made of Revere Brass Strip has been awarded the Medal of Honor by Sportsman's Club of America for superiority of design and fish-getting ability while all Tony Accetta Baits have received National Sportsman's Research Award . . . a real tribute to design, construction and effectiveness.

Revere helps "fit the metal to the job"

AND A BAIT MAKER SAVES ON FORMING AND FINISHING COSTS WHILE PRODUCING AWARD-WINNING LURES

The fishing lures of Tony Accetta & Son, Riviera Beach, Florida, are known all over the world for their ability to catch fish. That's due to design. They are also known for their fine workmanship and ability to take a hammering on rocky reefs and shoals, and still retain their ability to attract fish. That's due to the material from which they are made . . . a Revere Brass with special grain size and finish.

Says the Senior Accetta, "The high quality of Revere Brass has, without a doubt, contributed immeasurably to the quality of our lures. In fact, Revere Brass is of such fine quality and finish, uniform grain size and structure that even after stamping and forming only a minimum of work is required prior to chromium plating. This means we save on both forming and finishing costs. Since we have been using Revere Brass we have not had a single customer complain due to poor quality material."

Why not put the extensive knowledge of Revere's sales representatives to work for you? With the wide variety of metals at their disposal, perhaps they can help you select the metal best suited for the job, with a resultant saving of money while improving product quality.

REVERE COPPER AND BRASS INCORPORATED
230 Park Avenue
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Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles, Riverside and Santa Ana, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Fort Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

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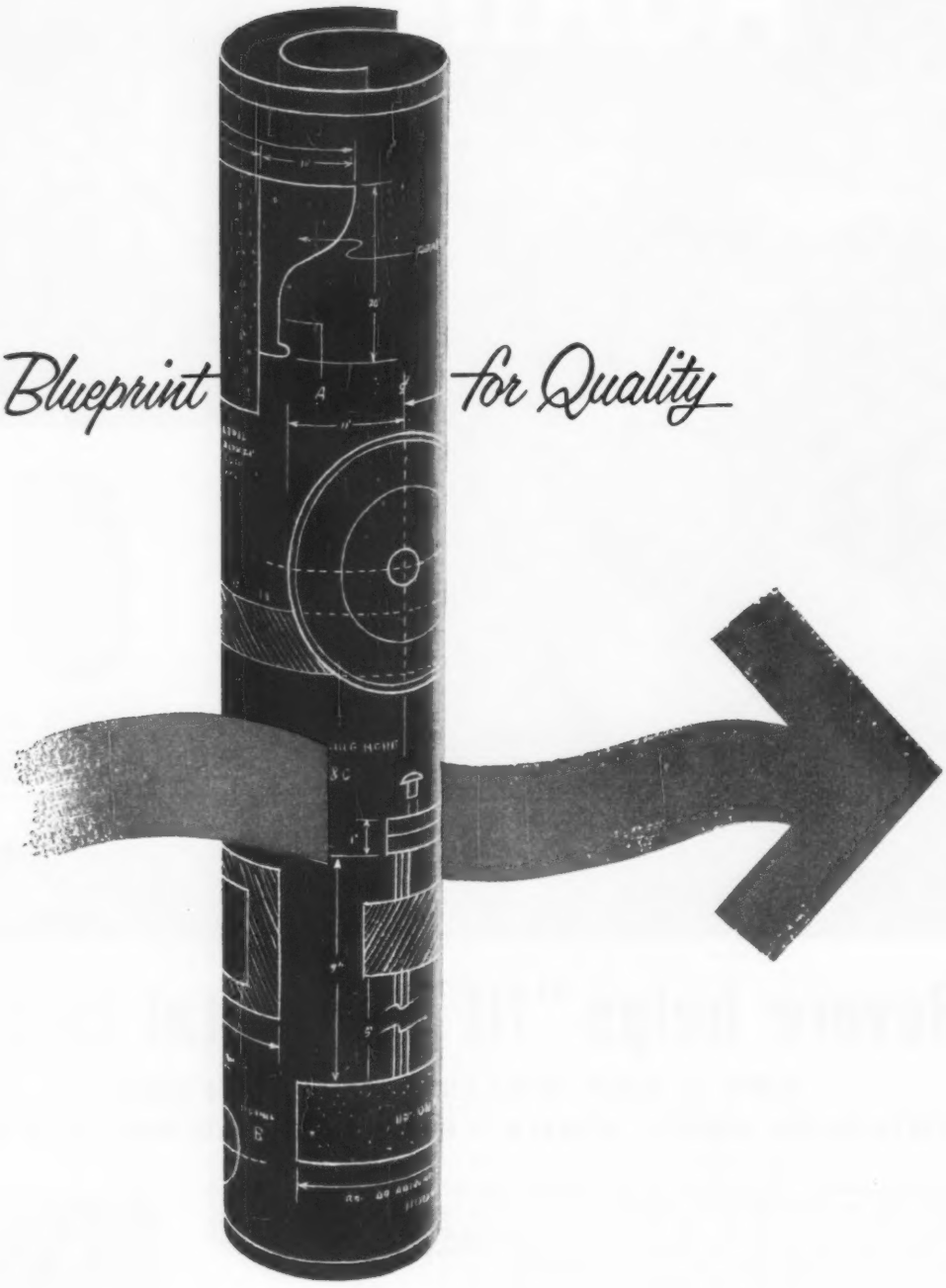
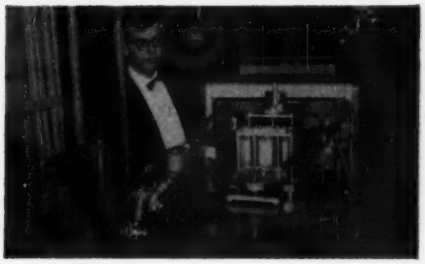


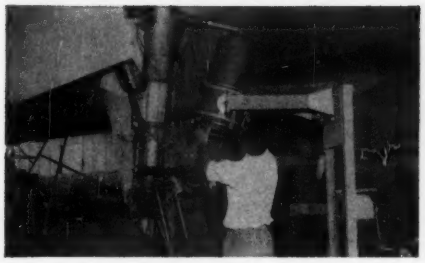
NOW SPERRY OFFERS ALL THREE Nondestructive Testing Techniques

Now, added to the Sperry Products line of ultrasonic test instruments and systems, are Triplett & Barton portable industrial X-ray and Peterson Sonoflux® magnetic particle test equipment. The combination of all three provides Sperry with the most versatile range of nondestructive testing devices and techniques available from one source.



SPERRY
Ultrasonic Testing

Sperry Products, the pioneer in ultrasonic testing, continues to stay ahead of the parade with newly developed systems and techniques — such as this SIMAC inspection system developed for Chrysler Corporation which automatically tests sheet steel for flaws at speed in excess of 400 feet per minute.



TRIPLETT & BARTON
Industrial X-ray

Triplett & Barton portable X-ray is unmatched for proven utility and heavy-duty performance — the real answer to your laboratory, production and field problems. Here the lightweight head (65 lbs.) of a 275 KV model is being positioned to inspect a weld in an air-liner landing gear strut.

SONOFLUX
Magnetic Particle Systems

SONOFLUX brings to Sperry a complete new line of magnetic particle inspection equipment, both standard and special order, as well as services and a full line of supplies. Here a crankshaft is being checked for fatigue and stress cracks at the overhaul plant of an engine re-builder.

Sperry
ULTRASONIC TESTING

TRIPLETT & BARTON
INDUSTRIAL X-RAY

SONOFLUX
MAGNETIC PARTICLE

Call on your Sperry Sales Engineer. He is fully prepared to evaluate your quality control problem and recommend the most efficient nondestructive test system for you.

See Sperry's full line of nondestructive testing equipment at the Southwest Metal Show, Dallas.

Sperry Products Company
DIVISION OF HOWE SOUND COMPANY
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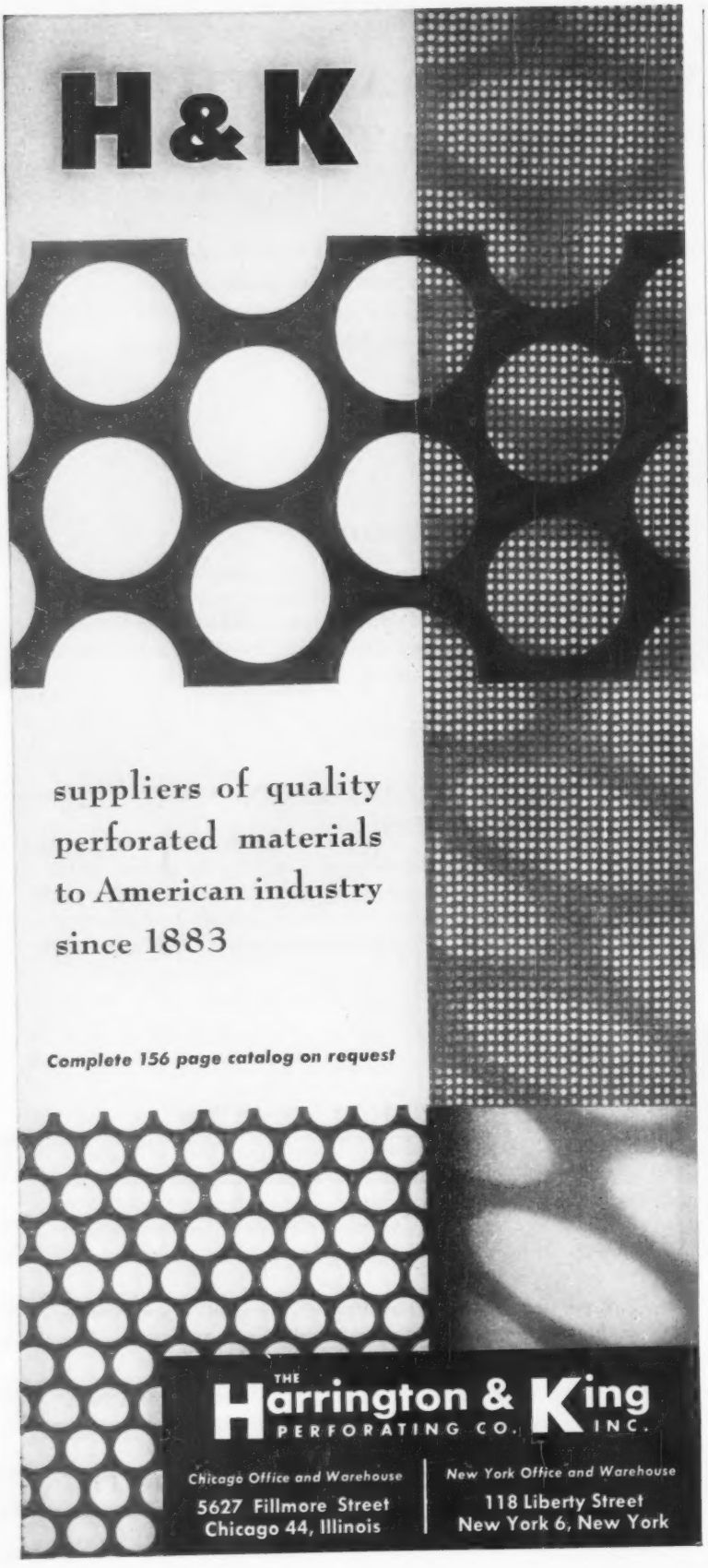
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CALENDAR
OF MEETINGS

May 5-6, American Institute of Steel Construction: National engineering conference, Brown-Palace Hotel, Denver. Institute's address: 101 Park Ave., New York 17, N. Y. Executive vice president: L. Abbett Post.

May 5-6, Refractories Institute: Semiannual meeting, Homestead Hotel, Hot Springs, Va. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

May 5-7, Grinding Wheel Institute and Abrasive Grain Association: Seminannual meeting, Homestead Hotel, Hot Springs, Va. Information: W. Bentley Thomas, Thomas Associates, 2130 Keith Bldg., Cleveland 15, Ohio.

May 7-10, National Tool & Die Manufacturers Association: Spring meeting, Statler-Hilton Hotel, Washington. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.

May 8-11, National Fluid Power Association: Annual meeting, Grand Hotel, Point Clear, Ala. Association's address: 1618 Orrington Ave., Evanston, Ill. Executive vice president: Barrett Rogers.

May 9-10, International Acetylene Association: Annual meeting, St. Francis Hotel, San Francisco. Association's address: 30 E. 42nd St., New York 17, N. Y. Secretary: L. G. Matthews.

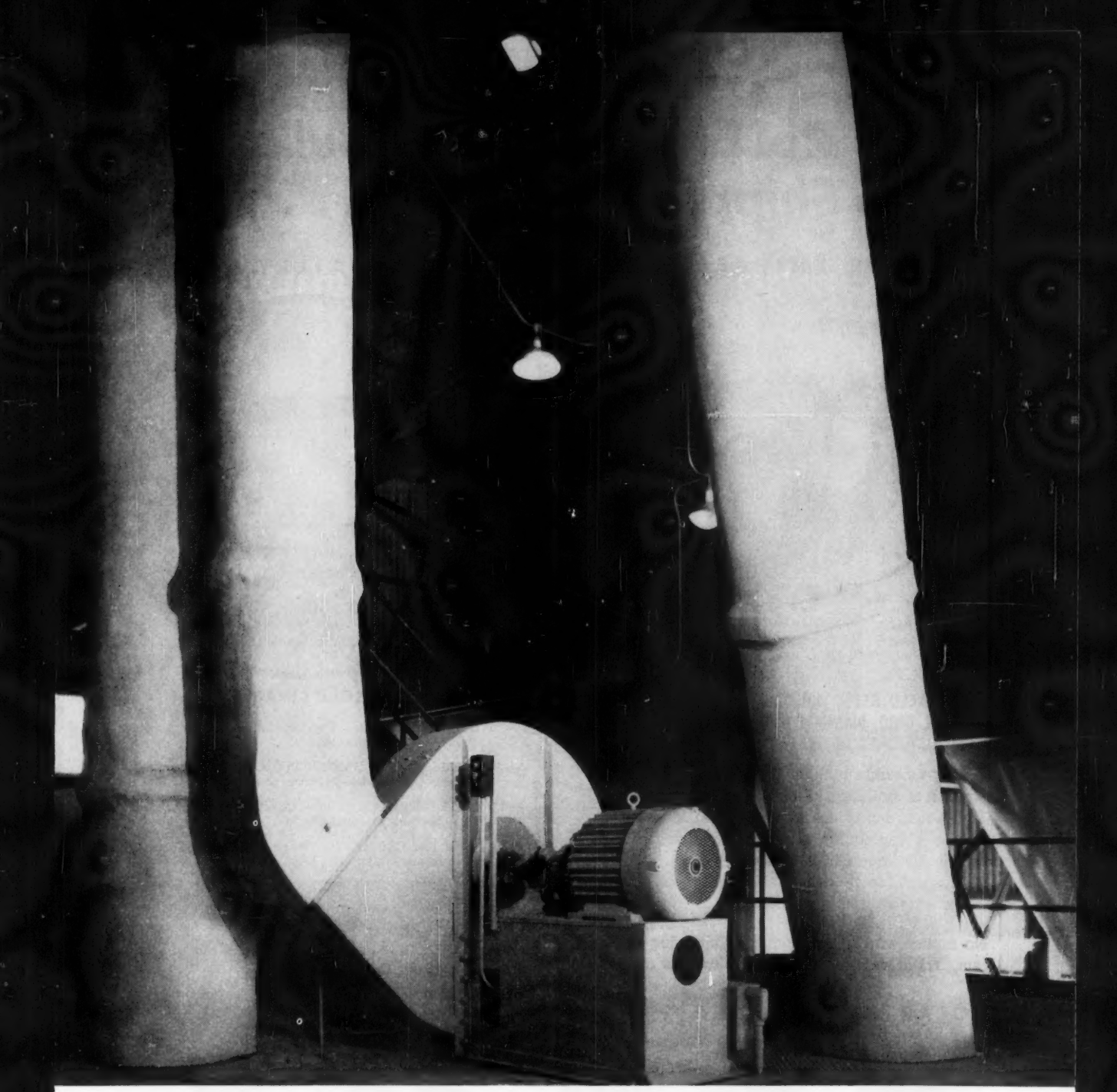
May 9-11, American Management Association: Special personnel conference, LaSalle Hotel, Chicago. Association's address: 1515 Broadway, New York 36, N. Y.

May 9-12, Instrument Society of America: Instrument-automation conference and exhibit, Civic Auditorium and Brooks Hall, San Francisco. Society's address: 313 Sixth Ave., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

May 9-12, Society for Nondestructive Testing: Semiannual meeting, Baker Hotel, Dallas. Society's address: 1109 Hinman Ave., Evanston, Ill. Secretary: Philip D. Johnson.

May 9-13, American Foundrymen's Society: Castings congress and exposition, Convention Hall, Philadelphia. Society's address: Golf and Wolf Roads, Des Plaines, Ill. General manager: W. W. Maloney.

May 9-13, American Society for Metals: Southwestern Metal Congress and Exposition, State Fair Park, Dallas. Society's address: Metals Park, Novelty, Ohio. Managing director: Allan Ray Putnam.



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At a plaster board plant in Georgia, Century motors are providing dependable power to drive two large vent fans on roller-type pulverizing mills. The mills crush walnut-sized rock into talcum-like powder for the manufacture of dry-wall panelling and plaster.

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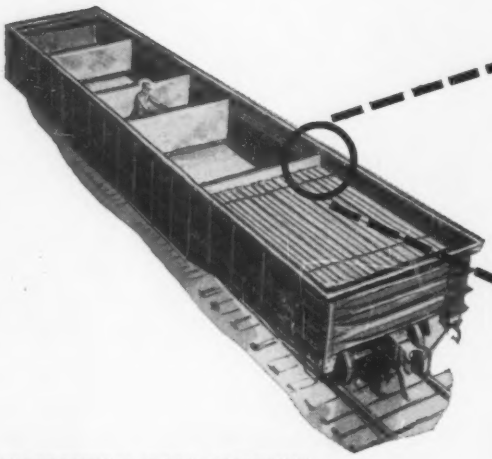

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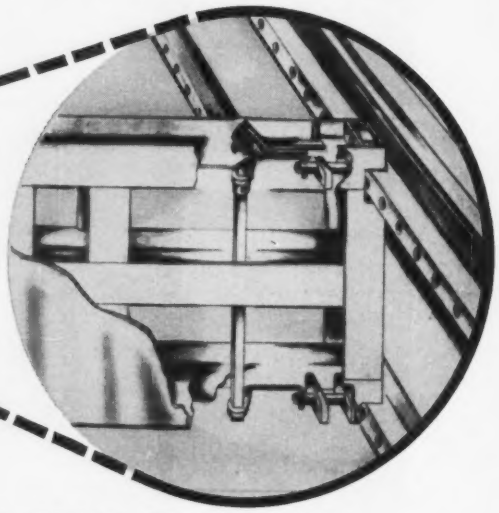

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- OVERSIZED CASE-HARDENED LOCKING PINS . . . Easy operating, allows for distortion of side walls.
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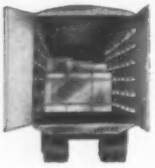
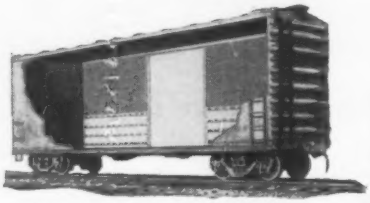
- POWERFULLY BOLSTERED . . . by five 6" "I" beams . . . built to last.
- PERFECT COMPANION . . . for Yocar 3-section roofs.
- TWO FACINGS available . . . no extra cost . . . choose ¼" steel or wood.

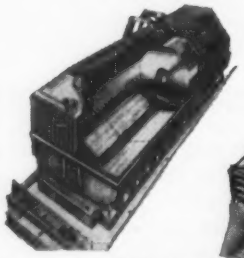
YOCAR MAKES A COMPLETE LINE OF DAMAGE CONTROL DEVICES



Safe-Cargo Anchor Rails for piggy-back trailers.



Yocar Safe-Cargo Econo-Guard —increases car wall life.



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Yocar 3-Section Removable Roofs.

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Here is the VIZI-DISC mounted on a portable grinder ready to run. Note the unique shape.

As the grinder starts we get a spinning pattern similar to a propeller or electric fan blade.

Operator can "look through" the VIZI-DISC as grinder turns-over at full rpm.

The VIZI-DISC

This is what everyone is talking about. The new METALITE VIZI-DISC lets you see the exact area where the work is being done. Its unique shape gives it "see through" like a blade of an electric fan or an airplane propeller. This amazing new disc actually cools itself while it's cutting. And, because there is no blind spot, you grind only the area that needs to be smoothed, thus increasing disc life. VIZI-PADS to back-up the VIZI-DISC are available. They have a herringbone non-skid face that grips the abrasive disc, and guarantees an aggressive rate-of-cut. You can get a free demonstration from a Behr-Manning representative or write Dept. S-5.

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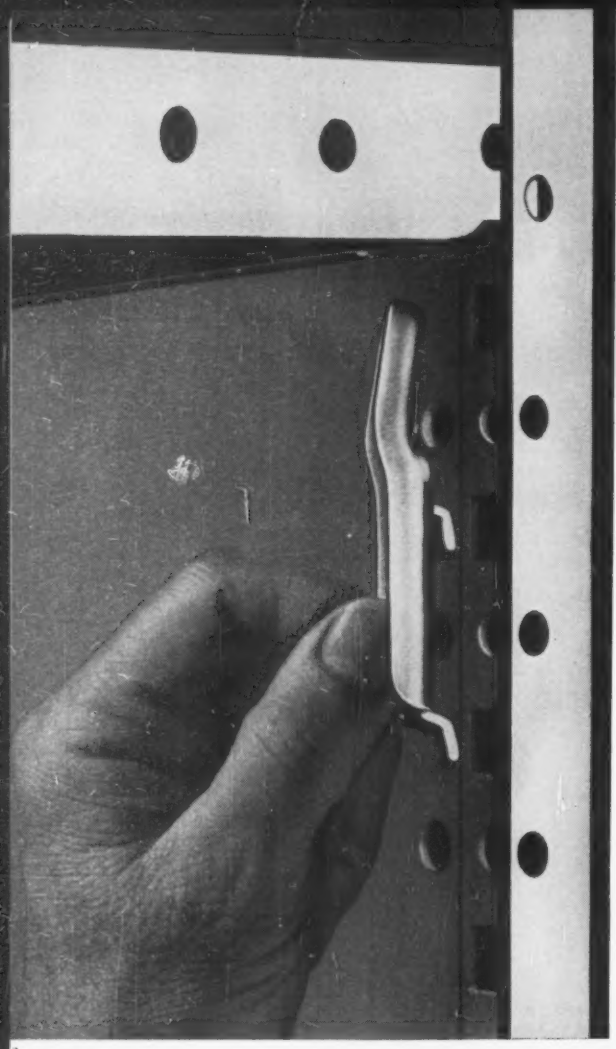

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COMPRESSION SHELF CLIP

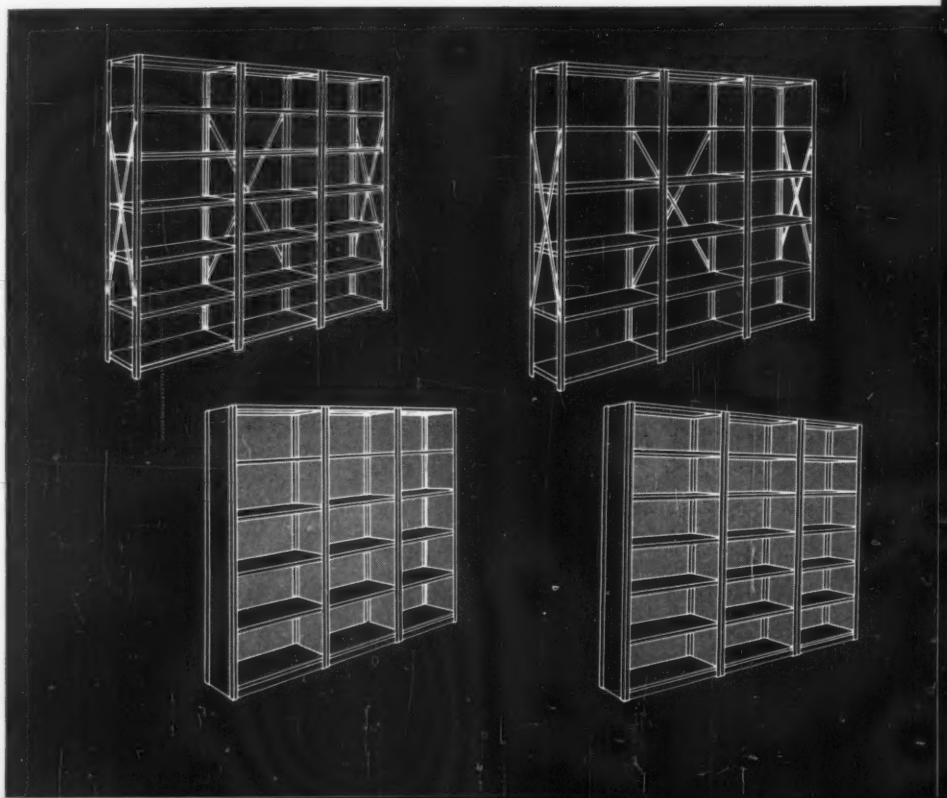
New, Republic Compression Shelf Clip is designed to ease and speed shelving erection.

No tools needed. Clip slips firmly into upright slots. Simply slip clips onto upright—no studs or bolts needed. And Clip Shelving supports heavy loads safely.

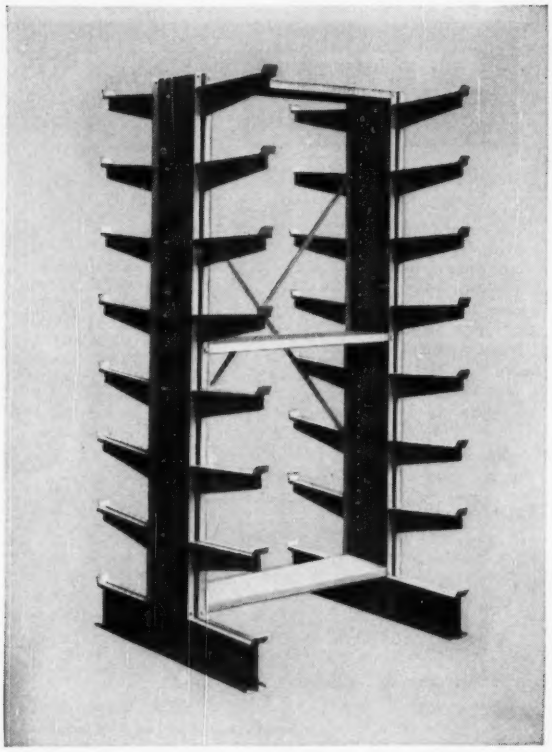
One man can erect any given assembly of Republic Clip Shelving quicker and easier than ever before. Simple shelf rearrangement and long life make Republic Clip Shelving a profitable investment.

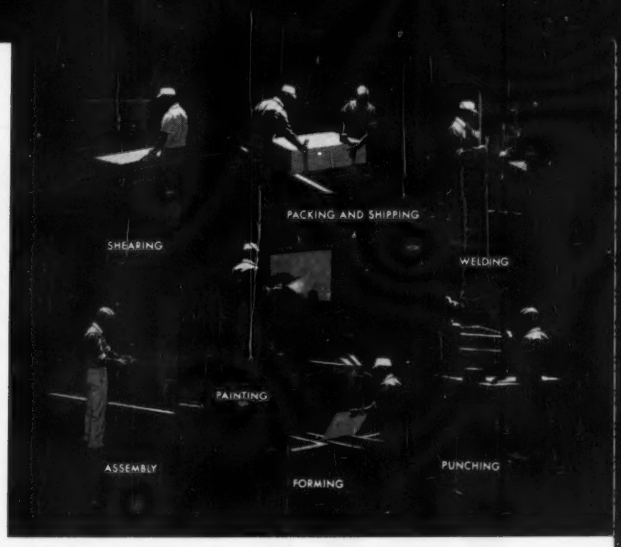
Shelves, uprights, and accessories are Bonderized. This extra Republic feature provides a superior base for the baked-on enamel finish and protects against rust and corrosion. Clips are furnished in clear bright cadium for years of rust free service.

To learn about the advantages and economies of this new product, call your Republic representative. Or write for attractive, illustrated catalog.



REPUBLIC CLIP SHELVING Rack Type Units provide storage space for packaged goods, cartoned goods, bulky materials, and other stock not requiring the enclosure of backs and ends. Sway braces add to the rigidity of rack type units. Open and closed, the assemblies shown here are typical of the thousands of combinations possible with Republic Clip Shelving. Write for catalog.





REPUBLIC BAR RACK stacks, stores 14 tons in 36″ space! It is the ideal solution to a practical, economical way to store bars, pipes, rods, any elongated stock. Each arm arrangement permits easy access and stock segregation. Each arm supports 2,000 pounds. Arms adjustable on 2″ centers. Size: 78″ high, 36″ wide, 33″ deep at the base. Send for additional information.

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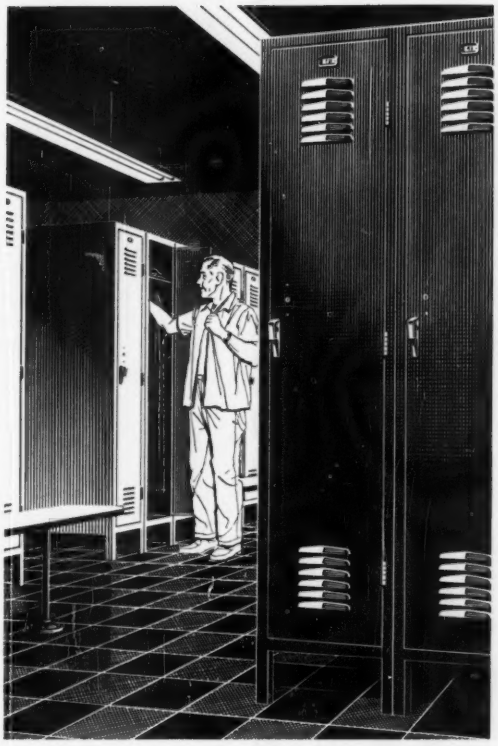
REPUBLIC STEEL LOCKERS improve employee relations with clean, attractive, dress-wash-and-change facilities. Big, roomy interiors are planned for convenience and good ventilation. Strong and sturdy—made of steel. Complete protection for tools and personals. Bonderized for long service life. And Republic's Berger Division will help you with your locker planning and assume full responsibility for proper installation. Call your Republic-Berger representative, or write.



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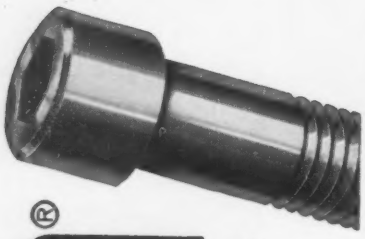

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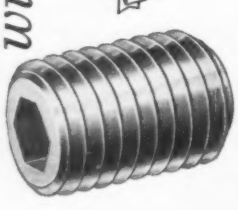

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Much of this applies to wire rope. Like Roebling Royal Blue Wire Rope for a "tall-in-the-saddle" example. Wherever it goes to work it makes a lasting impression. It works harder and better than other wire ropes—it radiates confidence on the job.

Royal Blue's resistance to the ills that wire rope is heir to: impact, crushing, shock, abrasion—is truly outstanding. It is the toughest wire rope you can use for a long time to come.

We have a wealth of Royal Blue data in the forms of literature, workaday applications throughout industry and hard facts on how this "happy breed" can keep a lot of your wire rope money where it belongs—in your pocket. If you will write Wire Rope, John A. Roebling's Sons, Trenton 2, New Jersey, we'll tell you all.

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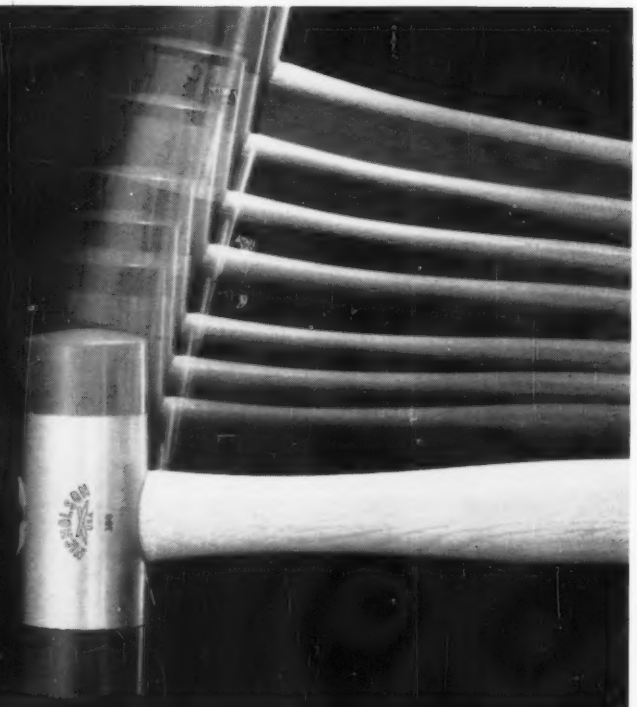
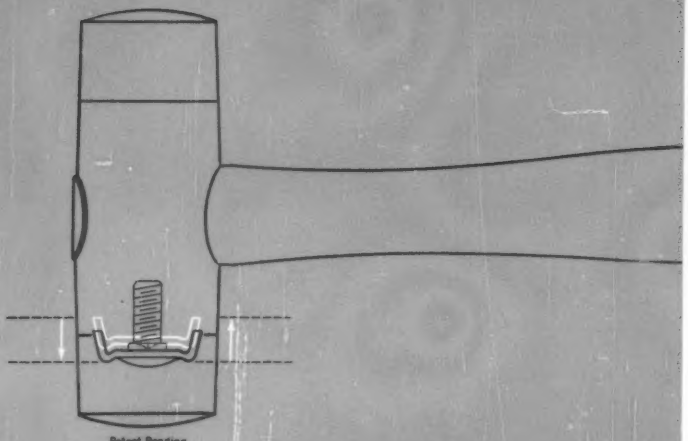
Nicholson Soft-Faced Industrial Hammers take punishment in stride



FLOATING ACTION dissipates shock

TORQUE HOLDER prevents head from twisting during impact



Nicholson research and engineering pay off for you in this entirely new type of industrial hammer. It features a two-piece torque washer and stud. Here's how it works. At the point of impact, the torque washer rides freely up and down on the stud. The percussion of the hammer blow is absorbed and dissipated by this "floating action." This built-in shock-absorbing action reduces fatigue on the part of the worker.

The four gripping prongs of the torque washer are securely imbedded in the head. This prevents twisting during impact, increases productivity and worker safety.

Try this new principle in industrial hammers. It will meet your most demanding requirements. You'll see and feel the difference that Nicholson development and engineering have created.

* **Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.**

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In addition, we produce a vast line of platinum products and chemicals that have been used by industry for over a century.

We are unique because of our ability to *work these metals to such tiny, precise forms.* Bulletin No. 12 describes our tubular products—Catalog No. 5 describes our platinum products. Write for them.

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Tubular Products Division **J. BISHOP & CO.** *platinum works* 30 KING STREET, MALVERN, PENNA.

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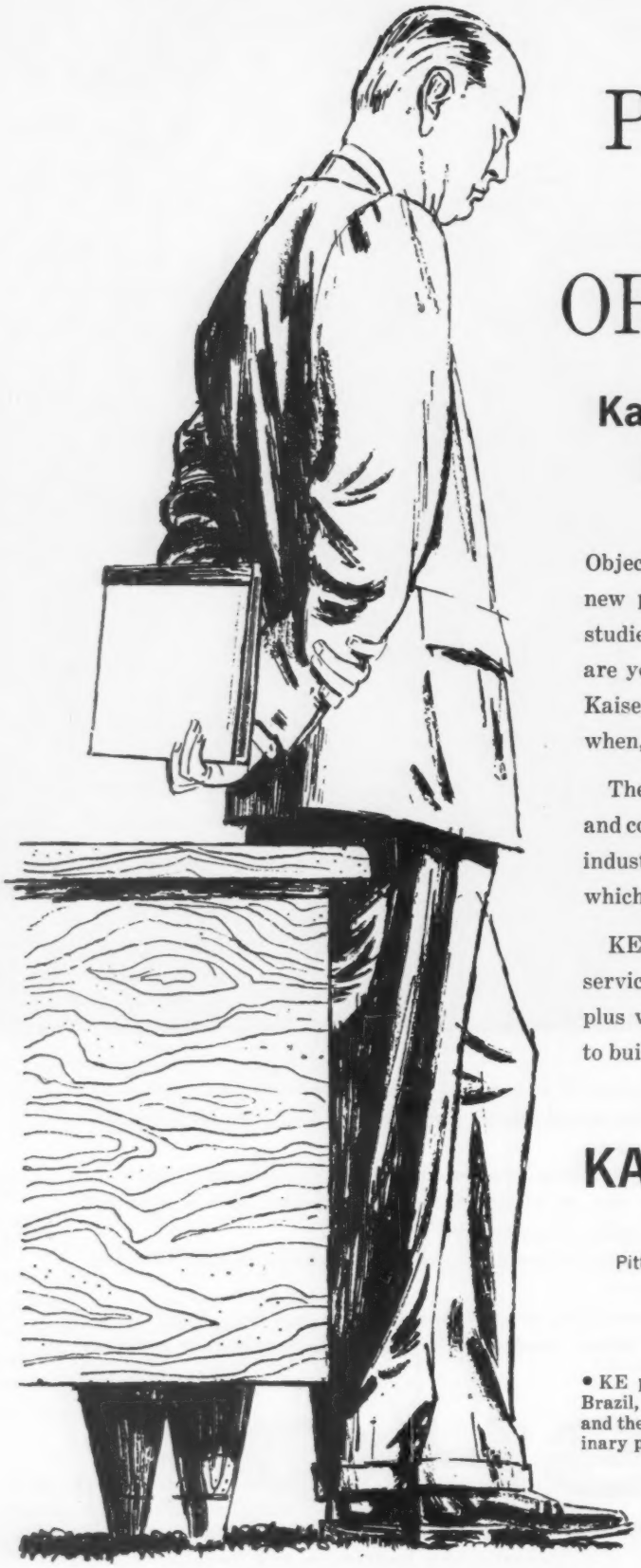

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Are you satisfied with your ingot car maintenance costs?

These rugged 8-wheel Ingot Mold Cars haven't had one single repair job since they were bought *six years ago!* Yet they work like new. Each car is designed with an all-welded steel body that offers long life and dependable service. United States Steel has the facilities, the skilled engineers and the technical know-how to build *strong* industrial cars. You give us your specifications and requirements, and we'll design for you the finest industrial cars in the world. We would appreciate an opportunity to discuss this personally and in greater detail. To arrange a meeting write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. or any of our District Offices.

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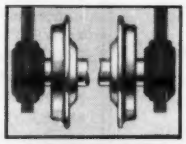
Here's how USS Industrial Cars are built better:

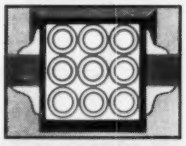
ANTI-FRICTION OUTBOARD BEARINGS:

High-capacity anti-friction bearings are located outside each of the car's eight wheels to minimize sideway and to provide long, smooth-running performance.



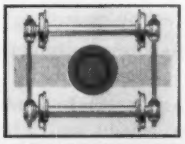
SEVENTY-TWO COIL SPRINGS:

Eighteen coil springs on each side of both trucks provide a total of 72 separate springs for a shock-absorbed level ride.



HIGH ENGINEERING SAFETY FACTOR:

Designed for a 200-ton normal capacity load —including ingots, molds and stools —each car has a substantial built-in safety factor to withstand maximum ingot-stripping thrusts.



OVERSIZE CENTER PLATES:

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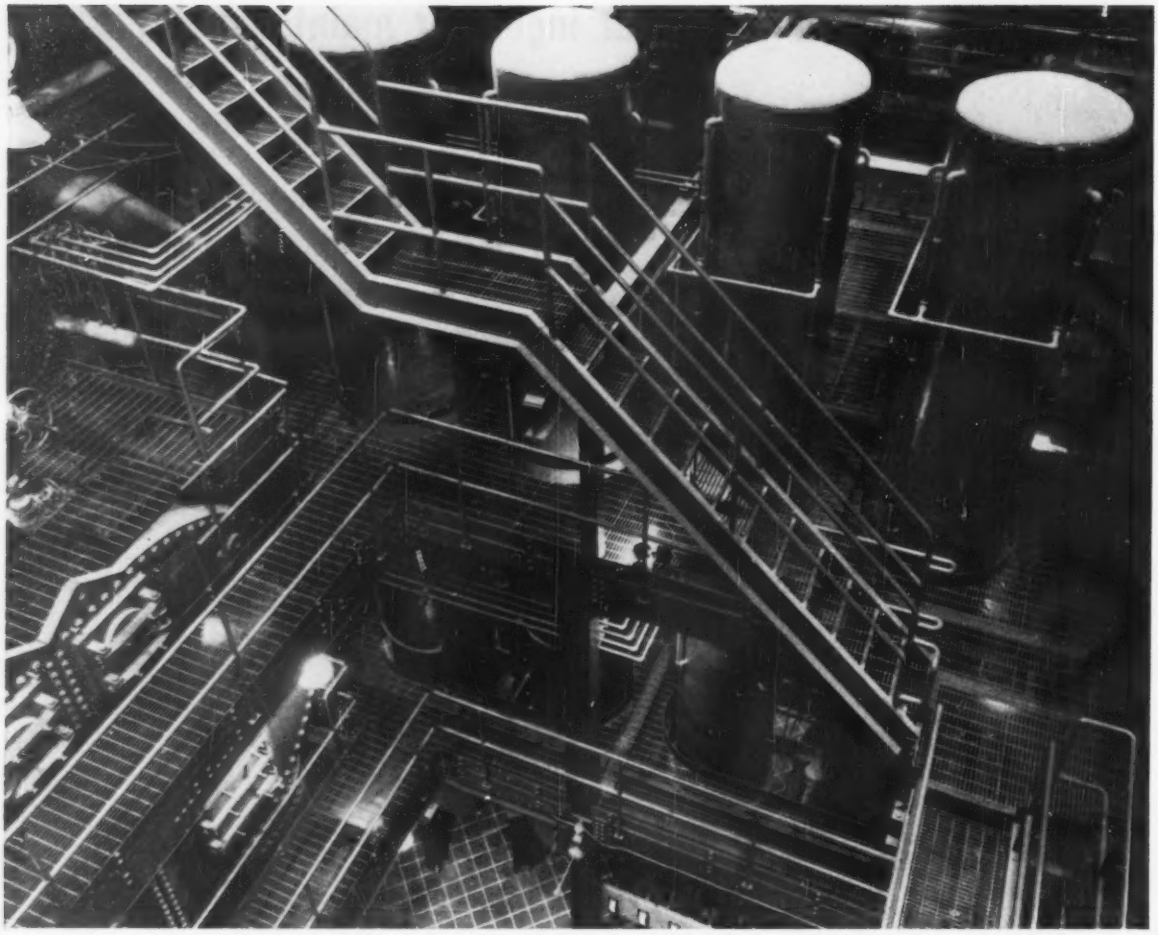
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel



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WALTER J. CAMPBELL, editor of STEEL, The Metalworking Weekly, testified before the House Appropriations Subcommittee on Foreign Operations, Apr. 25. Mr. Campbell's testimony was requested by the Citizens Foreign Aid Committee, Washington, and was prompted by this magazine's recognition of the growing threat of low wage foreign competition to the metalworking industries. Because the editors believe foreign competition is now and will continue to be one of metalworking's gravest problems, we reproduce Mr. Campbell's testimony below.

The Impact of Foreign Competition

There is a deep and growing concern among metalworking managers over the inroads being made in the metalworking and metal producing industries by foreign manufacturers in the last decade and particularly within the last several years.

Not only are we importing much larger quantities of metalworking products into this country, but our manufacturers are losing export sales which formerly constituted a substantial part of their market.

The result is not only a serious loss in business for our manufacturers, but a loss of employment possibilities for our workers and a loss of taxes to our government.

U. S. a "Has Been" Nation?

We believe the problem is the gravest yet faced by American industry. We believe that, unless checked, the rising tide of imports and loss of exports can make the United States a "have not" and a "has been" nation. We believe this country could experience a decline comparable to that of Spain in the 17th century and that of England in the early part of the 20th century.

The enormity of the problem is not yet fully recognized, even by the companies and industries most affected.

For example, much has been said about the increase in imports of finished steel products. Finished steel products are the most important raw materials of the metalworking industries. Traditionally, we have exported much more than we have imported.

That tide has turned.

Three years ago, in 1957, we imported 1.1 million tons of steel mill products. Last year, 1959, we imported 4.4 million tons. In just three years, our imports increased by 3.3 million tons.

But looking at the steel import figures is like watching a baseball game through a knothole, where your view is limited to the pitcher's mound and the pitcher's activities. You don't know what's going on unless you can see the batsman, the catcher, the infield, and the outfield.

Let's glance at home plate.

In 1957, we exported 5.2 million tons of steel mill products. Last year, our exports dropped to 1.5 million tons, a decline of 3.7 million tons in two years.

That increase in imports and decrease in exports means that 7 million tons of finished steel products were not produced in American mills, or by American labor. Seven million tons of finished steel products are equal to 10 million tons of steel ingots, or about 11 per cent of our 1959 production.

Steelworkers Lose

Had that 7 million tons of steel been produced in this country, it would have provided employment for 56,000 more people in the steel industry. That calculation is based on the industry experience of 16 manhours required to produce a ton of finished steel.

But the increased imports and decreased exports of steel mill products still represent only a knothole view of what is happening to the steel producing industry.

Let's look at first base.

There are important further losses to the steel producing industry in the increase in im-

ports and decrease in exports of end products which are made of steel.

For example, last year we imported 625,000 foreign-built passenger cars. That was 580,000 more than we brought in in 1955. At the same time, our exports of American-built passenger cars dropped to only 115,000, less than half what they were in 1955. In other words, we are losing the production of more than 700,000 passenger cars annually. That production is being lost to foreign competitors.

Now the average automobile requires one and three-quarter tons of finished steel in its manufacture. The automobiles lost to foreign competitors would have required an additional one and a quarter million tons of finished steel annually.

That amount of steel production would have provided employment in the steel industry for an additional 10,000 workers.

Statisticians in the American automobile industry figure that 187 manhours in direct labor go into the production of each passenger car. Thus, the loss of 700,000 automobiles to foreign competitors means that job opportunities were denied to 65,000 American workers.

Gone: 130,000 Jobs

Those computations are based on direct labor only. Such direct job losses in steel mills and auto plants alone total more than 130,000.

If it were possible to compute such job losses among all the suppliers of goods and services to the steel and automotive industries, the employment loss would be much more frightening.

Now let's take a look at fasteners—bolts, nuts, rivets, screws.

Back in 1953, we imported 16 million pounds of fasteners.

By 1957, imports had more than doubled —to about 34 million pounds.

By 1959, imports again had doubled to nearly 70 million pounds, and throughout the year there was a sharp and steady increase in imports.

Statistics available for the early part of 1960 show that we are importing fasteners at an annual rate of 218 million pounds. Mr. William E. Ward, president of Russell, Burdsall & Ward Bolt & Nut Co. of Port Chester, N. Y., believes 1960 imports will be at least that high. That would be triple the 1959 imports and would be three times the output of the largest independent fastener company in the United States, according to Mr. Ward.

Now bolts, nuts, screws, and rivets use steel as their raw material. The indicated imports in 1960 would require more than 130,000 tons of steel to produce. That amount of steel, lost to American mills, would provide jobs for another 1000 workers.

The loss of jobs to American workers in fastener plants will be between 2500 and 3000 since the production of fasteners requires 45 to 50 manhours per ton.

Scores of Industries Damaged

I wish that statistics were available to permit a similar detailed analysis and tabulation of the total amount of steel that is lost to American mills and the number of jobs that are denied Americans by the increased imports and lowered exports of such end products as machine tools, sewing machines, typewriters, bicycles, tableware, electrical generating equipment, electronic components, radios, optical equipment, twist drills, hand tools, surgical instruments, and scores of other products of the metalworking industry.

However, statistics on imports and exports of those products are not amenable to such analysis—at least not in the time and to the facilities I have available.

But market analysts for steel producers tell me they are much more concerned over the loss of steel markets resulting from the inroads of foreign competitors on metalworking end products than they are with the direct loss of steel mill products to foreign steelmakers.

But, of course, the big pinch comes in the particular segment of the metalworking industry involved.

Let's take a look at what is happening in sewing machines. In 1949, we imported 37,800, according to the Singer Mfg. Co. In 1950, imports more than quadrupled to 153,000 units. Last year, we imported 1,229,400 units. Japan alone now ships more than a million units a year to this country.

This development is rough on the people who are, or who were, in the domestic sewing machine industry. It is rough on the workers in the domestic sewing machine industry, just as it is rough on the auto workers, the steel workers, the workers in fastener plants.

Pinch in Machine Tools

Let's turn now to an industry that has not only economic but national security implications. I refer, of course, to the machine tool industry.

Machine tools often are called the "master tools of industry." They are the basic machines which cut and form metal and without which nothing made of metal could be manufactured in significant quantities. Our standard of living and the defense posture of the country rest on machine tools.

In the reconstruction that followed World War II, Western European countries, often with American financial aid, built many modern machine tool plants. As the capacity of those new and modern plants grew, they filled the demand from their own industries and then started looking abroad for markets. They made terrific inroads on markets formerly held by American machine tool builders, in foreign lands and here in America.

In the thirties and forties, 25 to 30 per cent of the output of United States machine tool

plants was sold abroad. Some years, it ran as high as 40 per cent of total output.

In the last few years, only about 10 per cent of American machine tool production has been sold abroad. Markets formerly held by the U. S. builders have been taken over by Germany, England, France, Italy, and other European countries.

Foreign machine tools are invading our domestic market in ever increasing numbers. The National Machine Tool Builders' Association, a trade association representing 90 per cent of the American industry, estimates that the percentage of the domestic market for general purpose machine tools increased from 6.3 per cent in 1955 to 17.5 per cent in 1959.

Builders Move Overseas

In an attempt at self-preservation, many machine tool builders have built, bought, or otherwise acquired manufacturing capacity in Europe to take advantage of the much cheaper labor available there. Added incentives to having manufacturing capacity abroad are supplied in more favorable tax policies in some cases and in avoiding restrictions which European countries place on imports of machine tools built in America.

Surveys by our editors and by the National Machine Tool Builders' Association indicate that half of all the companies building machine tools now have or are in process of acquiring manufacturing facilities abroad.

Gentlemen, as I watch the exodus of machine tool builders to foreign lands, I have to shudder at the thought of what would happen to us in a national emergency such as we faced in 1941 and 1942, or in 1950. I shudder to think what would happen if Russia should decide to send her armies out over Europe to the Atlantic.

To say that the move of U. S. capacity to Europe represents a serious threat to national security is an understatement.

Brass Mills Hurt

What has been happening in steel mill products and end products made of ferrous materials has also been happening to nonferrous metals.

Imports of brass mill products increased from 21 million pounds in 1949 to 199 million pounds in 1959—an almost tenfold increase.

Those imports are cutting into a market already sorely hit by a decline in demand for some of their products and by competition from other materials.

Domestic brass mill shipments dropped from 3.6 billion pounds in 1943 to 1.9 billion pounds in 1959. A mild increase is expected this year but that is small comfort to domestic brass people who are sitting on more than 2 billion pounds of idle capacity while their overseas competitors are operating at capacity.

Domestic brass mill products people find they just can't compete in price with foreign producers. They are underbid by as much as 20 cents a pound. Lately, American companies have been trying to beat overseas competitors by cutting domestic prices. But they are unable to reduce their costs as much as they cut prices. Price cutting without cost reduction is no solution to their problem.

I could outline the problems of other segments of the metalworking and metal producing industries as a result of the rising tide of foreign competition. But the facts would be much the same.

Why We're Vulnerable

Let me turn now to some observations as to why we are so vulnerable to competition from foreign manufacturers.

1. We have aided financially the establishment of modern industrial plants in our foreign aid programs.

2. We have shared our technological know-how with the politically friendly countries that now are our industrial competitors.

3. In our preoccupation with foreign aid, we have neglected domestic aid which other governments have granted their industries. For example, the United States depreciation rules and regulations are among the most archaic in the world. The countries which are offering us strong competition have modernized their depreciation regulations to encourage modernization and efficiency of industry. Too often, our depreciation rules penalize the company that wants to modernize.

And, as you know, many foreign governments have aided their industries seeking export markets by extending or guaranteeing credit. They have protected their home markets through various devices we have abandoned—import quotas and restrictions, subsidies.

4. Our industries pay wage rates which are fantastically higher than those paid by our foreign competitors.

The last reason—the disparity in labor costs—is the most important. I am confident that American metalworking and metal producing companies could hold their own against any competition in the world were wage rates more nearly comparable. I believe we could even pay our workers a substantial premium and still compete.

We're "Sitting Ducks"

But the differential in wage rates has grown so great that we are just "sitting ducks" for foreign competitors, and some other means of equalizing the situation will have to be found.

A few minutes ago, we were talking about the machine tool industry. Generally speaking, half the cost of a machine tool is in direct wages.

The average rate for production workers in the American machine tool industry, exclusive of fringe benefits, is $2.40 an hour. That compares with Western European rates as follows:

England, 85 cents an hour; Germany, 60 cents an hour; Italy, 35 cents an hour. Our labor costs in the machine tool industry are four times greater than those in Germany, seven times greater than those in Italy, and three times greater than those in England.

This means that in a machine tool costing $10,000 in the United States, the labor cost is $5000. The labor cost on the same machine in Germany is only $1250.

The German manufacturer has other cost advantages arising from the difference in wage scales. A considerable portion of the cost of the machine tool is represented by components such as motors and electrical systems. The lower wage scales in Germany mean that those components also cost less than they do in this country.

They Undersell Us

That explains why Western European machine tool builders can manufacture products in their modern plants, ship them to this country, paying freight, insurance, and tariff, and still undersell domestic builders by 30 per cent.

In some other categories of metalworking, the disparity in wage costs is even more pronounced.

During the 1959 steel strike, we collected the best data available on average hourly earnings in the leading steel producing countries. To get comparable figures, we had to use the year 1957, because data were not available from some countries for more recent years. The American Iron & Steel Institute had the same experience we had and came up with almost identical figures.

Our figures show average hourly earnings in the United States were $2.92 an hour.

In Germany, they were 67 cents.

In the United Kingdom, they were 80 cents an hour.

In Belgium, they were 77½ cents an hour.

And in Japan, they were 41 cents an hour.

In other words, gentlemen, American steel producers were paying their workers more than seven times as much as were Japanese steelmakers, more than four times as much as German steelmakers, and more than three and a half times as much as British steelmakers.

No End in Sight

The disparity in wage rates, of course, has been increased by the wage contract signed by American steelmakers and the United Steelworkers in January. That contract will raise the employment costs for American steelmakers by 40 cents an hour over the term of the contract. Meanwhile, foreign steelworkers are glad to settle for increases approximating 5 cents an hour.

It takes about 16 manhours to produce a ton of finished steel. Under present wage rates, that means the cost of labor input per ton of steel in this country now is about $60 a ton. In Western Europe, the labor input cost is around $12 to $14 a ton, and in Japan, it is in the neighborhood of $7 to $8.

The steelmaking facilities of those countries are just as modern, and in some cases more modern, than the facilities in this country. With a labor saving of $50 a ton, it is no wonder that foreign steelmakers can flood world and American markets with material at prices $30 to $40 a ton under the costs of American mills.

The narrowing margin of American technological superiority can no longer overcome so enormous a cost disadvantage.

What we have said about wages in the machine tool and the steel industries is, of course, true of other segments of metalworking with only minor variations. In France, a year ago, I visited an extremely modern auto plant in which a substantial share of output was earmarked for export to America. The workers in this plant received the equivalent of $90 a month, less than what a Detroit autoworker gets for one week.

Our Gravest Problem

The rising tide of metalworking imports into this country and the diminution of our metalworking exports pose one of the gravest problems our metalworking industry ever has faced. And metalworking has made possible the standard of living which made us the envy of the world. If it is weakened, so our standard of living will be lowered. Our world leadership will be impossible to maintain.

We think the problem is exceedingly grave today. We think it will get worse before it gets better.

Some of our people say hopefully that in time the standard of living among our politically friendly competitors will rise and that their wage rates will be forced up. I hope that is true. But to date, our wage costs have been rising much more rapidly than in any other country.

What We Must Do

I believe that foreign competition's inroads on the metalworking industries have become a national problem and should be recognized as such.

I believe that we must modernize our depreciation system to encourage increasing our production efficiency.

I believe that our government must take all proper steps to help American industry maintain a position in world trade.

I personally dislike artificial restraints on trade and doubt that they can prove effective in a world grown suddenly small.

But I also dislike the idea of handicapping American industry through artificial restraints and through policies which give an unfair advantage to foreign competitors.

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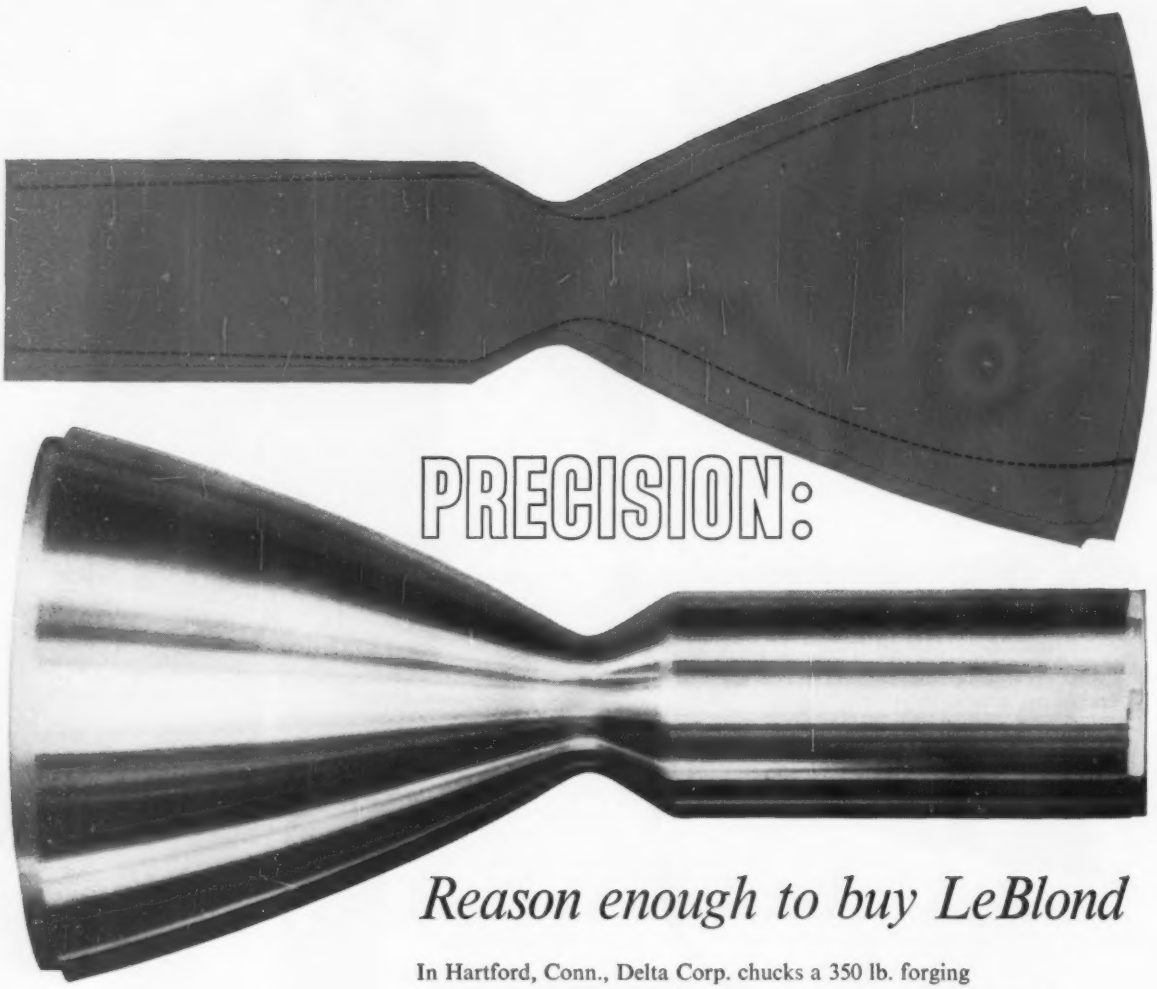

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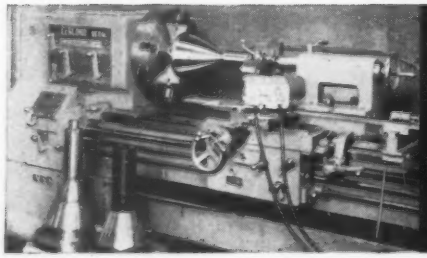

THE R. K. LEBLOND MACHINE TOOL COMPANY
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Ostriches in the Sand

We have been looking over the results of a survey made by this magazine's editors to find out what metalworking managers want in depreciation reform.

We note that 96 per cent believe a thorough overhaul of depreciation laws, rules, and regulations is needed.

That's good.

We note that three of four are taking advantage of limited or partial reforms (sum of digits and double declining balance methods) instituted in 1954.

That's good.

Then we note that one of four respondents is ignoring the above methods. Why?

Sometimes they find no advantage in the newer methods and are sticking with the straight line system.

That's as it should be.

Then we run into the shocker. A sizable minority is not using the faster writeoff permitted because: "It would show our profit to be lower in the current year and would look bad in our annual report."

Well, bless our ostriches in the sand.

That reminds us of the $10,000 a year man who states his salary as $15,000 because he wants to "look good" to his tax collector.

Are those people kidding their stockholders?

In our opinion, failing to take advantage of the limited depreciation reforms is not only poor business practice. It is also a disservice to all industry. The apparent indifference of a large segment of the business community is one reason for the lethargy of the Treasury and Congress in initiating revision of our archaic depreciation policy.

The Treasury is doing its own survey on industry's depreciation practices. The results will be an important influence on the extent and shape of depreciation reform to come.

Let's use to best advantage what the government now permits.

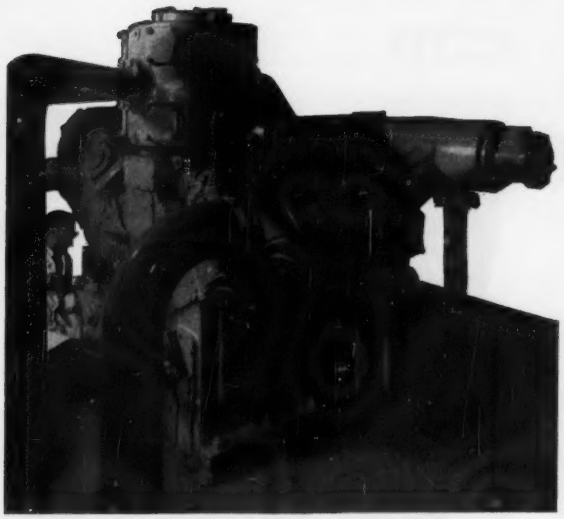
Let's not be ostriches in the sand.

Walter J. Campbell

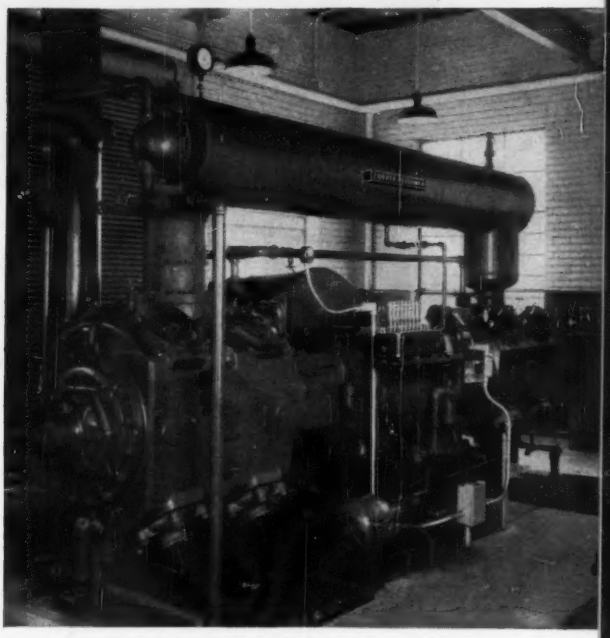
EDITOR

George Edick, *Domestic Sales Manager, The Cooper-Bessemer Corporation, and* Floyd Paschke, *Sales Manager, The Rotor Tool Company, explain...*

HOW TO BOOST YOUR PRODUCTIVITY WITH COMPRESSED AIR



Installing a Cooper-Bessemer DMR-3 Air Compressor for foundry service. Capacity is 1670 cfm at 110 psig discharge. Other units available for service down to 572 cfm.



Cooper-Bessemer Model EM Air Compressor in a metal-working plant. Rated 1125 cfm at 110 psig discharge. Other models in ratings up to 10,000 hp.

The thing that counts in getting top output with air tools is *air pressure at the tool, under load.* Is this productivity what it should be in *your* plant? Here is a service that helps you find out *for sure* . . .

The teaming up of application service engineering of Cooper-Bessemer and its new subsidiary, Rotor Tool, provides full-scope experience to help you analyze your compressed air needs and plan your facilities for optimum production efficiency. This experience encompasses the study of compressor capacity requirements, number of compressors and their location for greatest economy, regulation of the plant, the distribution system and portable air tools. This service is yours without obligation.

It will pay you to call in the nearby application engineer of Cooper-Bessemer or Rotor Tool to help you make sure that you are getting maximum productivity with compressed air.

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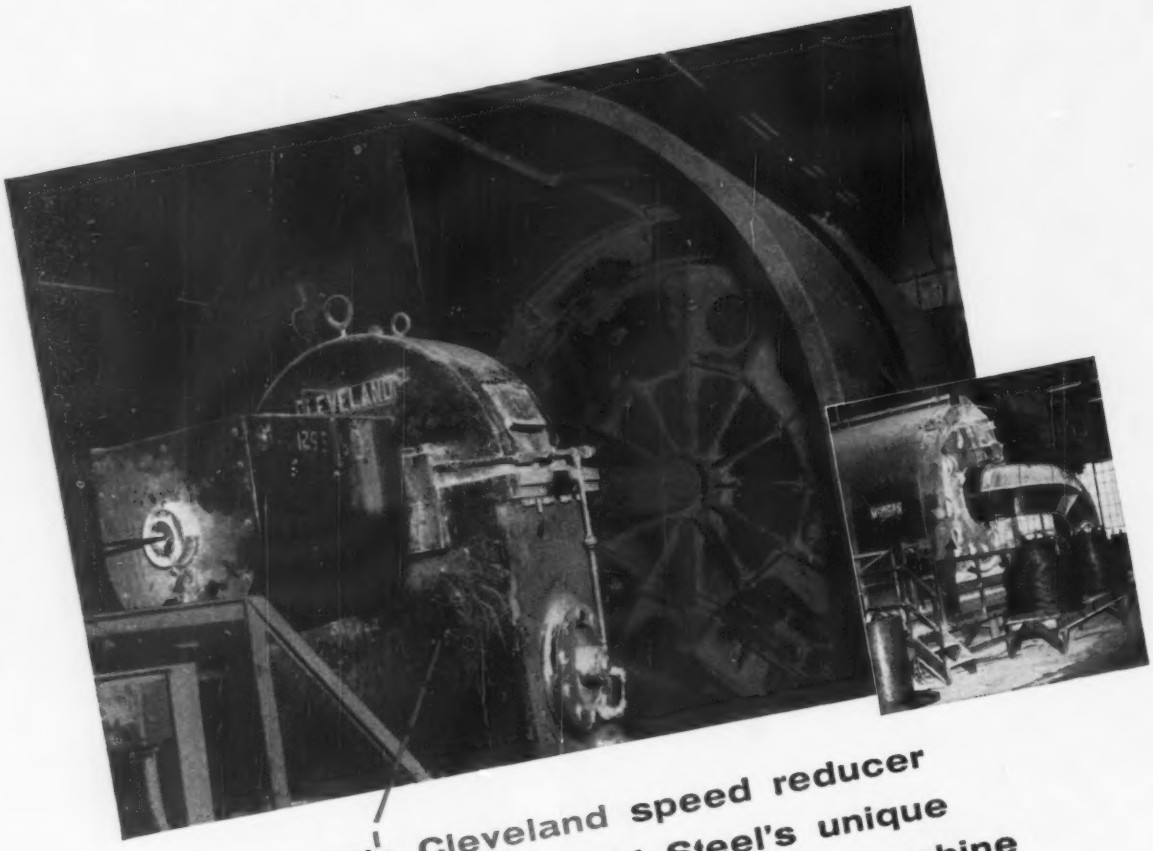

This versatile Cleveland speed reducer smoothly drives Sheffield Steel's unique stationary bull block wire drawing machine

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Incoming wire passes through a special hollow shaft that carries the gear in the drawing machine's large, heavy-duty Cleveland worm gear drive. This successful, proven installation at Sheffield Div. of Armco Steel Corp., Kansas City, Mo., is revolutionizing the drawing of large wires for boltmaking.

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ABOARD UNITED FLIGHT #630 (Cleveland to Boston): News Editor Bill Dean interviews E. O. Barsness, purchasing agent, Bath Iron Works (center) and Ward Weller, president, Ward Weller Co. Inc.

Eastern States' Solid Sales Base Supports Optimism

Will metalworking have a spring sales upturn? Conflicting answers to that question prompted STEEL to make a coast-to-coast check. The editors are visiting major metalworking centers; they're talking with key executives and industrial economists in their offices, in airports, aboard planes, in hotels, taxicabs—wherever they can find them. Last week, the editors covered the Eastern states. Here are their findings:

EASTERN STATES' business, like their weather, is improving. But like the region's countryside, sales curves will have plenty of hills and valleys this year.

With few exceptions, the executives STEEL interviewed are optimistic. Most had excellent first quarter sales and look for the second quarter to be slightly better. They expect to stay on that high sales plateau for the rest of the year. There's no talk of a recession—few indications of a boom. Rather, they say you can expect a solid year. Metalworking sales will reach a new peak, but it won't be far above last year's.

• **Puzzling Period**—Leonard H. Clark, manager of marketing, Standard Pressed Steel Co., Jenkintown, Pa., sums up the feeling of most of the executives contacted: "First quarter sales were good but confusing." The problem: Most predictions of 1960 industrial activity were unrealistically high. When the forecasts weren't met, people started to worry. They began to fear a downturn while their sales were at record heights. Now they have stopped comparing their performance with predictions and have begun to compare it with the 1959 pace. The new comparison makes 1960 look good. So optimism is returning. But it's a guarded brand of optimism—because most executives aren't sure which way their sales trends will turn. This year's most common sales curve will probably be a fairly straight line—on a high level. Industry

IN WASHINGTON OFFICE, Jack Botzum, Washington editor, gets government predictions from Louis Paradiso, Office of Business Economics

JENKINTOWN, PA.—Leonard Clark, Standard Pressed Steel Co.: "We've noticed an order spurt in April"

BOSTON—Arvid Corneliussen, United-Carr Fastener Corp.: "We set up special division to handle small company orders"

has committed itself to record expenditures for plant and equipment; government spending is high; consumers are well heeled and optimistic.

But a small minority is still singing a somewhat pessimistic note. Example: Paul McGann, chief economist, Bureau of Mines, told STEEL that the metalworking industry is in for "a great deal of adjustment." He says a decline may begin in about six months, but it will not be as severe as that of 1958 because Congress will stimulate the economy with spending for highways and schools.

Here's an industry - by - industry report of STEEL's findings in the Eastern states:

EASTON, PA.—H. J. Leaver, Treadwell Engineering Co.: "Equipment buyers are shopping around more than ever. This multiplies engineering costs"

PROVIDENCE, R. I.—L. B. Colt, Federal Products Corp.: "Our foreign sales are increasing substantially too"

• **Automotive**—Autodom's production cutbacks have bent but not fractured the optimism of New England auto suppliers. Example: Budd Co.'s vice president and director of marketing, Herbert A. Boas Jr., believes retail sales of autos will hold at the current high level for at least another 60 days.

E. T. Syvertsen, director of marketing, Gabriel Co., says his firm's shock absorber sales so far this year are 43 per cent above those in the like period of last year. He expects sales to be 60 per cent ahead of the '59 pace by the end of the second quarter.

• **Appliances**—Eastern appliance makers and their suppliers checked by STEEL report a slight, but significant, sales spurt in April. "The small appliance market is strong, and our volume in it this year should exceed that of 1959," predicts Arvid Corneliussen, vice president, United-Carr Fastener Corp.

• **Capital Equipment**—Eastern producers of capital equipment are far apart in their predictions of 1960 business. The range: 35 per cent ahead to 40 per cent below last year's performance. Most are on the plus side. Machine tool builders believe the lag is partially due to The Machine Tool Exposition—1960 (Sept. 6-16 in Chicago). Reason: Many firms are waiting to see what will be displayed at the show before placing orders. To counter that, the builders will be introducing new machines as soon as they're ready —rather than unveiling them at the show.

George Lynn, general sales manager, Industrial Equipment Div., Baldwin-Lima-Hamilton Corp., says: "Inquiries are increasing . . . we look for more orders in the second half than in the first—and sales for the first four months of '60 have exceeded our forecasts."

• **Tool and Diemaking**—Philip Hurley Sr., secretary-treasurer, Micro Tool Co., typifies the outlook for most Eastern tool and die shops: "Orders were especially heavy in February and March; April business has been good; we expect business to be solid, but not exceptional, throughout the year," he says.

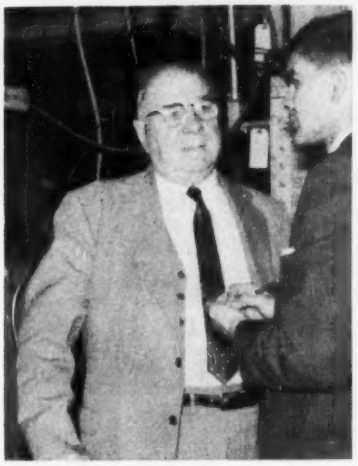
• **Components**—Manufacturers report 1960 sales ranging from 15 per cent above to 20 per cent below 1960 levels.

ALLENTOWN, PA.—R. L. Mullen, Lehigh Structural Steel Co.: "Overcapacity has brought keen price competition"

BOSTON—Oram Fulton Jr., Wheelock Lovejoy & Co. Inc.: "Service center operators are diversifying"

PHILADELPHIA—George Lynn, Baldwin-Lima-Hamilton Corp.: "Inquiries are coming in actively"

EAST HARTFORD, CONN. — Stephen Pierz, Fuller Brush Co.: "The appliance market is especially strong now"



HARTFORD, CONN.—Philip Hurley Sr., Micro Tool Co.: "It's extremely tough to find skilled men"

DEPLANING FROM UNITED FLIGHT #619 (Hartford to Cleveland), Associate Editor George Howick bids farewell to E. T. Syvertsen, Gabriel Co.

Ward Weller, president, Ward Weller Co., manufacturers' agents selling to the construction industry, says: "Sales of castings like dipper points, scraper blades, and tractor treads are up from year ago levels. We've closed more aluminum bridge railing orders in the last three weeks than the previous three months."

• **Brushes**—Stephen Pierz, assistant sales manager—industrial, Fuller Brush Co., says first quarter sales of industrial, maintenance, and power brushes jumped 10 per cent above those of the like 1959 period. He thinks volume for the full year will be 15 per cent better than last year's. April orders rose 6 per cent above the March pace.

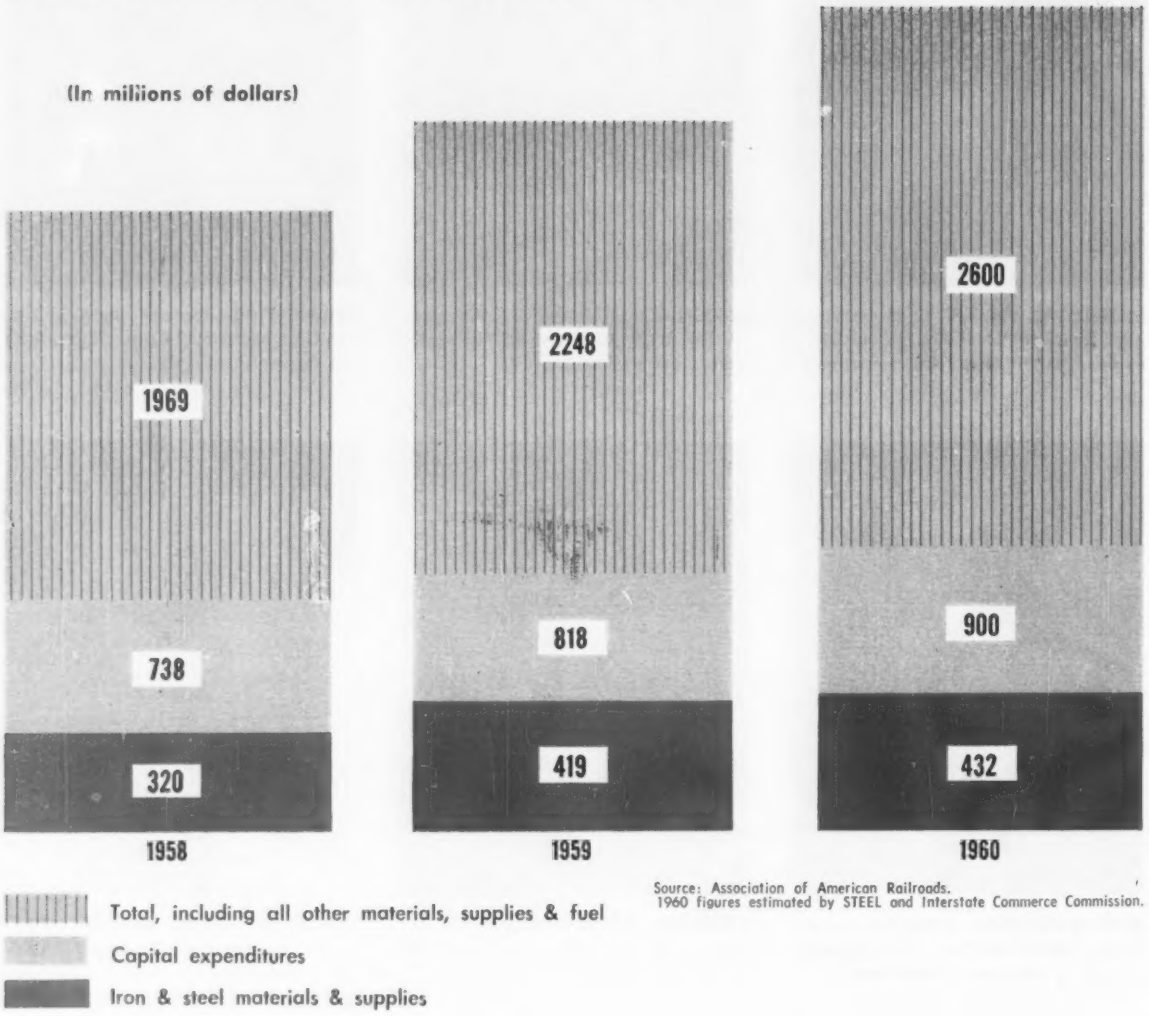
• **Structural Steel Fabricating**—Overcapacity and severe price cutting are hurting this industry's dollar volume. But the outlook seems to be improving. Example: R. L. Mullen, president, Lehigh Structural Steel Co., reports prices are firming up a little.

• **Instruments**—This industry's sales are continually on the rise—and they're climbing fast now. For example, L. B. Colt, vice president-sales, Federal Products Corp., says his firm targeted 1960 sales "well above" the 1959 level "and we're right on target for the year to date."

• **Shipbuilding**—Activity is low in this industry, but our sales are about equal to last year's, reports E. O. Barsness, purchasing agent, Bath Iron Works. He adds that sales of crushing equipment—primarily to the steel and cement industries—are substantially above year-ago levels.

Louis Paradiso, assistant director-chief statistician, Office of Business Economics, Commerce Department, predicts "a prosperous year with stable prices"—which agrees with STEEL's on-the-spot findings. He urges metalworkers to closely watch consumer spending for clues to second half business. He notes that personal income soared to $393.5 billion (annual rate) in the first quarter and implies that businessmen must now convince the consumer that it is a good time to buy.

Railroad Spending Turns Up



Source: Association of American Railroads.
1960 figures estimated by STEEL and Interstate Commerce Commission.

Rail Dilemma Hurts You Too

THE RAILROAD industry would like to spend more than $2 billion a year for metalworking goods. But taxation, subsidy, regulation, diversification, and labor problems must be overcome before such spending can be attained on a year-in-year-out basis, claim industry leaders.

The carriers' total annual spending goal is $3 billion ($1.5 billion for capital equipment and $1.5 billion for fuel, material, and supplies, including nonferrous metals, electrical equipment, automotive equipment, and other metal products).

This year's expenditures should reach $2.6 billion, continuing the upward trend which started in 1959. However, that's below the $2.8 billion spent ten years ago. And for the third year in a row, spending for iron and steel material and supplies will fail to equal the $465 million laid out in 1923.

• **Static Sixties**—Although the railroad supply outlook varies widely because of the broad variety of products consumed, the consensus is that unless some major changes come about, the over-all market will remain fairly static.

The anticipated surge in buying hasn't materialized this year because carloadings have fallen short of expectations. Loadings in the first 13 weeks rose only 0.3 per cent over those in the same period of 1959. Rail officials state spending will rise in proportion to any increase in business.

• **Dark Clouds**—A leading steel company earlier estimated that 80,-

000 freight cars will be built in 1960. The figure has been revised to 50,000. Significance: A boxcar, for example, requires an average of 14 to 16.5 tons of steel.

George Hudson, president, Western Railway Supply Co., a division of Western Industries, Chicago, predicts over-all steel use by the railroads will decline. Mr. Hudson reports that 25,000 miles of track have been taken up in the last ten years. Much of it can be re-used. Diesels cause less rail wear. Centralized traffic control systems have eliminated the need for much duplicated track.

• **Ups and Downs**—In the motive power field, the switch to diesels has reduced the number of engines required to haul a comparable payload. One diesel is claimed to equal two steam locomotives. Part requirements have changed.

Other transitions include the switch from brake shoes to disc brakes, steam to electric heaters, and increased use of weldments. Car bolsters and underframes are being welded instead of riveted. Welded rails are gaining in popularity, eliminating the need for many track joint parts and equipment for such work. Oxweld Railroad Dept., Linde Co., division of Union Carbide Corp., New York, leases and sells welding equipment, and welds rail on contract. W. S. Winn, manager, says 1960 will be "one of the best ever for our railroad business." The market for electrical and electronic devices has also risen with the trend to automated operations.

• **Silver Lining**—Two bright spots on the rolling stock front: Pullman-Standard Div., Pullman Inc., Chicago, reports a backlog of orders for its double deck commuter cars. Demand for piggyback equipment is also high.

Aluminum people are cheerful. "We expect an average of 2000 cars a year to be made out of aluminum during the next five years," predicts George E. Herrmann, manager, transportation sales, Aluminum Co. of America, Pittsburgh. Previous rate: An average of 212 cars yearly.

Makers of journal bearings are assaulting the "brass" market, claiming their product, though more expensive (about $800 per car), pays

Five areas in which changes are needed to clear the tracks for progress are cited by Daniel P. Loomis, president, Association of American Railroads.

1. TAXATION.

More realistic income tax treatment of reinvested earnings should be allowed immediately to stimulate capital spending for improved railroad facilities. Relief from state and local property taxes is needed to allow railroads a fair chance to compete with carriers using taxfree roads and water and air facilities.

2. SUBSIDIES.

Where tax money is spent to provide and maintain highway, air, and water facilities that benefit commercial interests, adequate user charges should be paid to the government by the beneficiaries.

3. DIVERSIFICATION.

Railroads should be allowed to provide services by truck, airplane, and barge on the same terms as anyone else, and the same freedom to diversify should be granted other carriers. The concessions would lead to better service at lower cost and also give the railroads equal use of transport facilities which their tax payments now help provide for their competitors.

4. REGULATION.

We urge maximum freedom (consistent with the public interest) for carriers to set freight rates and adjust services to meet changing public demand.

5. FEATHERBEDDING.

Makework practices not only inflate transportation charges but also sap the industry's strength and impair service.

The Cost of Featherbedding

"The San Francisco earthquake, considered one of the world's major disasters, represented a loss in property damage of $350 million. Yet the railroads pay out this much in unproductive wages every nine months."

—J. Handly Wright, vice president, Association of American Railroads

for itself many times over through longer life, less maintenance, and elimination of the hotbox problem. SKF Industries Inc., Philadelphia, maker of such equipment, sees an upswing in its railway supply business over the next five years, with slight fluctuations in late 1961 and early 1962, says S. H. Smith, vice president, sales.

• **Where or When?**—The railroads want to maintain an adequate, modern, fleet of cars and avoid deferring maintenance and repair work. "But where is the money going to come from in an industry which has a profit rate only half of other regulated industries and only a third as much as the average manufacturing industry?" asks Daniel P. Loomis, president, Association of American Railroads. "When a railroad buys a freight car to replace one costing $2500 in the 1930s, the price has risen to about $9500 due to inflation and structural improvements. To obtain the difference under today's 52 per cent corporate income tax, a railroad must earn, before taxes, about $14,500. To compound this problem of acquiring funds, the average depreciation writeoff for railroad property as a whole is an unrealistic 40 years, making the over-all rate of recovery of cost before taxes just 2½ per cent a year —and this in a period of rapid technological progress and obsolescence of plant and equipment." So like other U. S. industry, railroads need depreciation reform.

• **And How?**—"It is imperative that Washington take steps to allow the railroads to earmark more money out of income for use in replacing property worn out in operations," declares Mr. Loomis. "We feel fully justified in urging Congress to lower the tax writeoff period to a maximum of 15 years for rolling stock and 20 years for other transportation property." Better tax breaks are also being sought from local and state governments. Possibly a wedge by the railroads would help all industry in the tax fight.

Industry officials believe the Construction Reserve Plan is the most effective step toward building an adequate freight car fleet (see STEEL, Apr. 4, p. 96). The proposal permits railroads to set aside funds in a reserve to be used within five years. The money would finance equipment purchases and other capital improvements, with the amount so deposited tax deductible.

• **Featherbedding**—Work rules, brought to the public's eye by the steel industry, are a prime target for management's bombs. The Association of American Railroads claims $500 million a year is paid out for work not done and unneeded jobs created by antiquated work rules. Says J. Handly Wright, association vice president: "Unnecessary labor costs hit railroads disproportionately hard, since total employment outlays eat up 58 cents out of each dollar of railroad revenue, compared with 26.5 cents for general manufacturing."

The rails' share of intercity freight has dropped from 67 per cent to 45 per cent since World War II. "Railroads have been unable to pay the stiff penalties unions impose for special switching services beyond yard limits," laments Mr. Wright. The resulting poorer service has driven many shippers to competing carriers.

"Garbage," snorts a union official. W. P. Kennedy, president, Brotherhood of Railroad Trainmen, sums up the union viewpoint: "The railroads are broke mentally, not financially. They're still thinking in monopoly days when business had to come to them. They're not competitive minded and are not going out to get business. New methods, schedules, and techniques where less than carload freight will be profitable are needed. Not job cuts."

The unions queried by STEEL are eager to help the railroads in their fight to get fair government treatment for all carriers. And they want Interstate Commerce Commission regulations reviewed. But they're hopping mad at the "character assassination" of the featherbedding charge.

• **Jousting**—Wage negotiations with representatives of the Brotherhood of Locomotive Engineers are underway in Chicago. Federal arbitrators will reach a binding decision by May 14 which is expected to set the industry pattern. The big work rules issue has been sidetracked during the wage talks and will be negotiated separately. If a strike should come, railroad industry leaders don't expect it before fall.

Next week, STEEL will discuss how railroads are helping themselves.

U. S. Steel Chalks Up Record Quarter

"Cancellations in steel orders have declined markedly in the last few weeks," commented Roger Blough, U. S. Steel Corp.'s chairman, in reporting on the firm's first quarter sales and earnings last week. "We think we're producing steel now at about the same level people are consuming it." Calling this a highly competitive year for the entire economy, Mr. Blough said he didn't see any immediate change coming in steel price levels. The nation's top steel producer poured a record 9.8 million tons of ingots and castings in the first quarter. Company sales topped $1.1 billion, earnings $112.6 million.

Ike O.K.'s Labor-Management Talk

A secret meeting between AFL-CIO representatives and industry will probably he held within a month. President Eisenhower and Labor Secretary James Mitchell hope it will be the first in a series of conferences designed to iron out basic differences between labor and management. Key topics: Foreign competition, inflation, automation, productivity. Participants may be revealed this week. There's some speculation about the steel industry's desire to participate. Reason: The labor-management committee has already started talks to resolve steel industry differences with its union.

Successful A-plane Could Be Built

"Technology in both the powerplant and the airframe areas has advanced to the point to where we feel confident that nuclear powered, sustained flight could be demonstrated if it were desired," says Col. William A. Tesch, chief of aircraft projects branch of the Aircraft Nuclear Propulsion Office, Pratt & Whitney Aircraft Div., United Aircraft Corp.

Pratt & Whitney research has been on indirect cycle system—a liquid metal coolant carries nuclear heat from the reactor to a radiator in the turbojet, where the heat is exchanged to the air to produce thrust. "The system offers the potential for attractive performance in supersonic as well as subsonic applications," says Colonel Tesch.

ASTME Tool Show Interest Ran High

An estimated 35,000 metalworkers viewed exhibits at the American Society of Tool & Manufacturing Engineers tool show in Detroit last week. Six thousand products were displayed—1300 of them new within the last year. Showgoers also got a good look at some foreign machine tools which they will compare with offerings of domestic firms at The Machine Tool Exposition—1960 in Chicago this September. ASTME awards went to: Ralph J. Cordiner, General Electric Co.'s chairman, the 1960 Progress Award; Edward E. Griffiths, Pittsburgh consulting engineer, the 1960 Engineering Citation; Frank Martindell, consulting engineer from Santiago, Chile, the Joseph A. Siegel Memorial Award; C. S. Mott, president of Charles Stewart Mott Foundation, the 1960 Education Award; Edward C. Varnum, Barber-Colman Co., 1960 Gold Medal; Dr. Norbert Wiener, Massachusetts Institute of Technology, the Research Medal.

U. S. Steel Reveals Thinner Tin Plate

Details of a lighter, thinner tin plate were disclosed by Chairman Roger Blough of U. S. Steel Corp. last week. The new product will cut the weight of tin cans almost in half. It'll probably be commercially available in about a year. USS is seeking patent protection on its process. Industry sources believe "double rolling" is used: Cold rolled coils are cleaned, pickled, plated, then rerolled to finish gage.

59 New Ships Are Being Built

U. S. shipbuilders have contracts for 59 new vessels—30 to be delivered this year, 22 next year, and 7 in 1962, reports the Shipbuilders Council of America. The ships represent 1,370,190 dead weight tons—the smallest February backlog since 1956. Of the 59 vessels, 26 are more than half completed.

Lifo Relief Founders

Rep. Noah Mason's (R., Ill.) bill to give industry a break on lifo (last in, first out) tax accounting appears to have run into an election year roadblock. Support on Capitol Hill is lacking, and the Treasury Department reported to the House Ways & Means Committee that the relief recommended by Representative Mason would cost the government badly needed revenue. The measure would allow a firm to rebuild inventories involuntarily reduced by a labor dispute and deduct the difference between the liquidation and replacement values from income.

How '59 Profits Compare With '58's

Here's how industry's after tax profits in 1959 compare with the 1958 pace, reports the First National City Bank of New York:

	% Return on Net Assets		% Return On Sales	
Industry	1959	1958	1959	1958
Autos, trucks	17.4	9.1	6.7	4.2
Electrical equipment	14.4	12.2	4.8	4.2
Auto parts	12.5	7.4	4.2	3.6
Household appliances	10.9	7.7	5.8	3.9
Farm implements	10.8	7.3	5.8	4.6
Aircraft & parts	8.9	14.1	1.8	2.6
Machinery	9.9	7.9	5.0	4.3
Iron & steel	8.4	8.2	6.0	6.3
Nonferrous metals	8.2	6.8	6.7	6.4
Instruments	16.4	12.2	6.7	5.7

Small Ohio Firm Battles Mitsubishi

Ohio Congressman Robert Levering leads the fight

A U. S. FIRM with less than 250 employees has gone all the way to the White House in its fight to win a contract for 39 towing locomotives and three cranes for the Panama Canal Co. The U. S. firm: Plymouth Locomotive Div., Fate-Root-Heath Co., Plymouth, Ohio.

Last week, the Office of Civil & Defense Mobilization was preparing to rule on a plea by Plymouth to be awarded the contract instead of Mitsubishi Shoji Kaisha Ltd., Tokyo, Japan. (Its bid is $912,000 below Plymouth's.) Grounds: National security requires the maintenance of a healthy domestic mobilization base —in this case represented by a small locomotive producer in an area already hit hard by unemployment.

One consideration which can't officially influence the OCDM decision but is causing all parties great concern: Mitsubishi made its final bid of $3.8 million on the basis of specifications which were essentially developed for the locomotive by Plymouth, says Plymouth's Washington representative, U. S. Industries Inc.

• **First Bids Rejected**—The first specs issued by the canal one year ago were "pretty loose." Plymouth responded with a design for a rack and pinion, electric-hydraulic drive locomotive capable of ascending a 50 per cent grade. The Ohio manufacturer thought it was to receive the contract after some negotiation, even though Mitsubishi's first bid was lower. Plymouth thought that the Japanese company's bid was "clearly unresponsive" to the demands of the canal.

Plymouth was surprised to learn its bid was rejected, along with those of several other U. S. firms, for "varying degrees of nonresponsiveness." A second bid was requested. In February, Plymouth cut its price about $1 million, while Mitsubishi raised its bid $1 million. Both firms were "responsive" to the canal's specs which had been tightened up, says the firm, "in terms of Plymouth's unique design submitted for the original bid." At one point in the deliberations, Plymouth had been assured its design would be kept confidential.

On the face of it, Plymouth stands hardly a chance of receiving the contract even if it is morally entitled to it on the basis of the "free engineering," suggests a source close to the White House. All that can save the firm's case is an OCDM ruling that the mobilization base will be harmed if it loses. Plymouth argues it is the only company with a full line of industrial locomotives.

• **Allowances Suggested**—Rep. Robert Levering (D., Ohio) suggests a series of allowances for Plymouth's bid: A 10 per cent differential under the Buy American Act (normally 6 per cent); a 6 per cent differential as a small business; and a 6 per cent differential because of the unemployment problem in the area. In addition, the canal company estimates it must spend $115,000 if the successful bidder is a foreign firm because of the necessity of overseas inspection facilities. If those formulas were applied to Plymouth's bid, says the congressman, Mitsubishi would come out almost 2 per cent higher than Plymouth.

George H. Roderick, assistant secretary of the Army, which has a controlling interest in the canal, has ruled that Plymouth's bid is still $184,000 above Mitsubishi's—although he doesn't allow Representative Levering's 6 per cent small business differential. The other differentials are matters of law.

• **The Politics**—Political forces are at play in the case. The U. S.-Japan Trade Council, an association of 200 firms doing trade between the two countries, has written OCDM: "Having invited foreign nations to participate in the procurement of goods for the U. S., it seems shortsighted to then interpose unreasonable obstacles . . . Japan has been the U. S.'s best customer after Canada . . . about 35 per cent of Japanese imports come from the U. S."

The White House has asked OCDM to keep it "informed" about the status of the case. Last week, representatives from the government agencies affected by the case (Defense, State, Commerce, Small Business Administration, and others) met behind closed doors to design a decision that'll keep all factors in balance.

No matter which way the agency goes, it appears another chink has been driven into the Buy American suit of armor.

CINCINNATI

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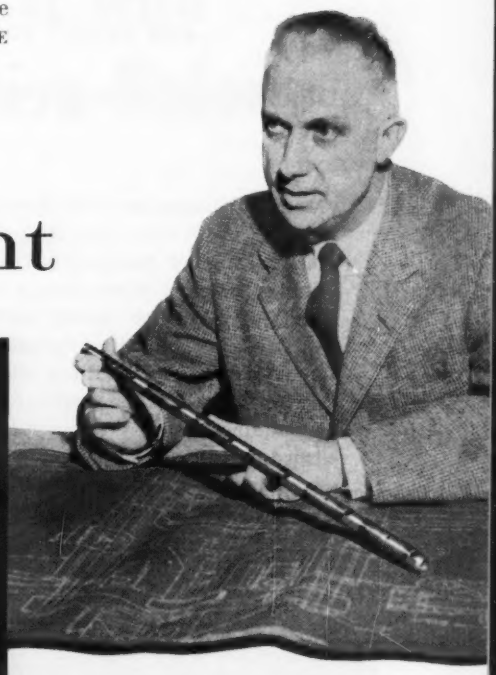
Rocker arm shafts look simple enough. However, their simplicity hides tough production problems, the kind solved best through long experience. Consider accuracy of straightness, for example. It must be of the highest order, but it's not easy to attain. Prior operations bow the shafts slightly; grinding must restore straightness. Cincinnati Grinding Machine Division Specialists know how to handle this problem; many highly successful production lines are evidence of their experience. The latest Cincinnati Centerless line for grinding these shafts is illustrated below. The line is equipped with quality control feature-advantages including automatic grinding wheel balancing, automatic diamond turners, push-button automatic truing, and automatic gaging on the last machine. Conveyors integrated with the machines keep the parts moving.

As in every installation, Cincinnati takes full responsibility for all the equipment, whether it's a multi-operation production line or a single automated machine. The Grinding Machine Division's variety of machines and years of experience are tops in the field. Take advantage of them! GRINDING MACHINE DIVISION, THE CINCINNATI MILLING MACHINE CO., CINCINNATI 9, OHIO.

Let's get this straight



ROCKER ARM SHAFTS *are precision ground to a high degree of straightness in passing through this line of four* CINCINNATI FILMATIC *Centerless Grinding Machines. Production, 167 per hour.*

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Precision Grinding Machines: Centertype • Centerless • Micro-Centric • Roll • Chucking • Centerless Lapping

Just suppose YOU cut reject costs 50%

Yes, you'd certainly look good

to your company and associates...

and benefit your company.

And it's not so wild a dream, either.

Many companies have cut the costs of rejects and re-work much more than 50%. Simply by wisely planned use of Magnaflux Testing Systems to find cracks and other defects in materials and parts—before time, money and man-power are wasted in useless later processing.

Savings don't stop there, either. Usually they also include increased production capacity, better maintained delivery or assembly schedules, satisfied customers who stay loyal against competitors' coaxings. All of which is very good for anyone with a personal stake in his company's future.

Best part of it is, *you* don't have to risk a thing. Magnaflux has been helping companies big and little to save money and assure reliable standards for over thirty years. You can be sure of getting the benefits you expect—whether to meet tight specifications, job lot or modest inspection standards . . . test castings, weldments, stampings or forgings . . . even for hardness, conductivity and alloy tests. Leading engineers, production managers and testing laboratories back your judgement in choosing a Magnaflux Test System, all sold on a money-back guaranteed basis.

This year many delayed capital appropriations will come up for decision. *Can you really afford any longer to get along without savings from a Magnaflux Test System?* Ask to have a Magnaflux engineer check your needs with you . . . then make a Magnaflux Test System a "must have" item.

High speed inspection of forged universal yoke shafts using conveyorized Magnaglo unit. Under black lights cracks become glowing signals impossible to miss and easy to judge.

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Fight for It with Depreciation Reform

YOU CAN REAP immediate benefits if you follow STEEL's plan for depreciation reform—even though Congressional action isn't expected until 1961.

In our opinion, Congress will never be convinced that thorough reform is needed until industry presents a more united front. The first step in that direction: Take full advantage of the depreciation laws on the books now. Chances are, you aren't.

A STEEL survey of 700 companies reveals that 96 per cent want reform, yet 43.8 per cent don't use the initial allowance (see Page 44) and 25.1 per cent don't use the new calculating methods which permit a greater return in the earlier years of an asset's life when depreciation is greatest.

The U. S. tax climate hurts our production efficiency. Most spending for equipment to improve that productivity is financed from depreciation reserves which are being eroded at the rate of $6 billion a year by federal policies (see STEEL Apr. 18, p. 91). We can stop that erosion with depreciation reform. Here are ways you can help make the change:

What You Can Do Now

"Our hands are tied (on reform) until Congress acts," complains a Chicago company's vice president.

He is mistaken. He may be overlooking partial reforms enacted since 1954.

For example, are you using Section 1.167 (a) 10 (b) of the Internal Revenue Service regulations on depreciation? It lets you assume "that all additions and retirements during the first half of a given year were made on the first day of that year and that all additions and retirements during the second half of the year were made on the first day of the following year. Thus a full year's depreciation would be taken on additions in the first half of the year and no depreciation would be taken (in that year) on additions in the second half.

That means you don't need to clutter up calculations with partial years. E. J. Kingsbury Jr., treasurer of Kingsbury Machine Tool Corp., Keene, N. H., makes this additional point: "At the start of the year you can make close estimates on depreciation due in the year coming up. You know the depreciation on assets already acquired in the previous six months. To that you add your estimate of the depreciation on capital assets to be received during the first half of the year."

A close estimate of your depreciation credit due in the coming 12 months will enable you to do a better job of capital spending.

Another way to improve return from depreciation under existing

What These Depreciation Terms Mean

• STRAIGHT LINE

This is the old method of writing off assets, still legal and widely practiced. Using it, you would depreciate a machine tool with a ten-year life at the rate of 10 per cent per year.

On a $10,000 machine, that would be $1000 annually.

• SUM-OF-THE-YEARS-DIGITS

This is one of two new techniques for writeoff permitted under 1954 laws. On the $10,000 machine with a ten-year life, figure your depreciation this way:

Divide the net worth of the assets by the sum of the digits calculated from the formula, $\frac{1}{2}N\ (N+1)$. Here, N is 10, so the divisor is 55. When $10,000 is divided by 55, the result is $181.82. Next multiply $181.82 by the number of years of life remaining.

With the machine of this example, $1818.20 is depreciated in the first year ($181.82 times 10) and $1636.38 in the second ($181.82 times 9).

• DOUBLE RATE DECLINING BALANCE

This is the second alternative writeoff method allowed by 1954 legislation.

With the $10,000 machine of this example, your first year writeoff would be $2000—a double rate, or 20 per cent, times $10,000. Your second year writeoff would be $1600—20 per cent times the undepreciated balance of $8000.

• INITIAL ALLOWANCE

You are permitted to write off 20 per cent of an asset's cost in the first year, provided the asset's cost doesn't exceed $10,000. It works like this:

First calculate your regular depreciation by any of the above methods, then apply a 20 per cent writeoff to the balance (up to $10,000). Depreciation for the second year and beyond is figured in the usual way on what remains after the first year's amortization. Using the $10,000 tool example:

Depreciation is $2800 in the first year with initial allowance and straight line, $3460 with sum-of-digits, and $3600 with double declining balance.

laws is to pick one of the alternate calculating methods allowed by 1954 changes in the Internal Revenue Code. Yet, 1 out of 4 metalworking companies hasn't done so. Some 25 per cent stick with the old straight-line method whereby you must depreciate the same amount each year on your assets.

Some (32.8 per cent) of the respondents to STEEL's survey use the sum-of-the-years-digits depreciation as their accelerated method. Besides speeding up the return, the system provides data on reasonable salvage value. That's important in these days when internal revenue agents are increasingly fussy about resale prices.

Many survey respondents shy away from sum-of-digits "because it's too complicated," but it's not difficult if worked out the way Mr. Kingsbury has set it up (see the explanation at left).

The most popular method of writing assets off is by the double rate declining balance method. It offers the same advantages as sum-of-digits, plus an even faster writeoff in earlier years.

You can get even faster writeoffs in the first year if you take advantage of the initial allowance permitted by 1958 revisions in the code. But 43.8 per cent of the respondents do not. Why?

"Too piddling to bother with." —Steel company.

"Requires too much additional paperwork to be worth the trouble." —Machine shop.

Yet, its effects are substantial for small companies and even many middle size firms, which may have spent only $10,000 in one year on capital improvements.

Still another bet that many companies overlook in depreciating according to current laws is the allowance permitted for research and development. R&D for a special machine can be written off in one year, but many firms don't do it.

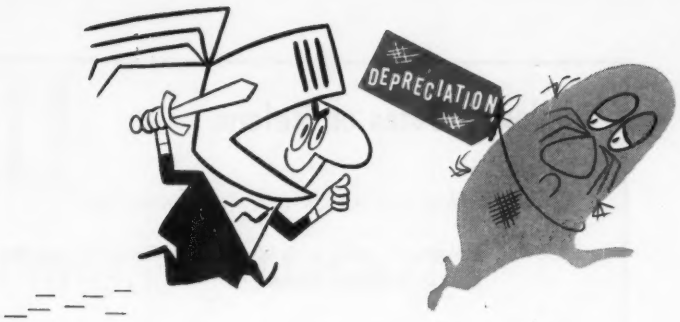
Similarly, special machinery can be expensed (written off in one year), provided it is truly special and provided the buyer does not demand guaranteed performance from the builder (and thus force all the risk on the builder). Alert companies are expensing the special machinery and engineering that goes into an assembly or production line, and writing off over the usual lives the standard units.

One tip: Instruct your equipment builder to bill you separately on research, development, engineering, and special tooling and other features of your machine that can be expensed. That will help support your case if it's challenged.

Many respondents to STEEL's survey say their managements refuse to adopt faster methods of writeoff "because profits would be reduced and the annual report would look bad."

The answer to that argument: Any company resorting to such accounting jugglery to show a profit won't stay in business long. The methods of faster amortization per-

mit you to write off your assets at a rate that more nearly conforms with the pace at which they actually depreciate. The slower methods give you an unrealistic rate. They lead to a false picture of profits. By inflating your earnings, they cost you money in unnecessary taxes.



What You Can Do Tomorrow

Full use of the partial reforms already enacted on tax depreciation permits:

1. Quicker return on your capital to allow you to modernize for greater production efficiency.

2. A stronger base from which to launch the drive for thorough reform.

Barring a miracle, full reform is dead this year. About all that industry can cheer over is the shelving by the House Ways & Means Committee of the President's request to eliminate the capital gains treatment of profit on the sale of depreciable assets.

It's a good bet that 1961 will be the long awaited year for full reform because:

1. Career officials in Treasury (who will still be around whether we have a Republican or Democratic administration) want to end the capital gains advantage. Look for the Ways & Means Committee to demand that Treasury include it with a complete evaluation of depreciation policy. Testimony against the capital gains change this year convinced a majority of committee members that the only answer is full reform.

2. Testimony late last year before the committee on U. S. tax policy dwelt heavily on the need to reform depreciation. The written report on those hearings should be ready by fall, in plenty of time for study by members of the next Congress.

3. Major legislative changes traditionally come in off-election years, as 1961 will be.

You can help the cause if you:

1. Let your congressmen know how you feel about reform.

2. Buttonhole members of the tax-writing Ways & Means Committee to let them know where you stand.

3. Sell the need for action to administration officials, particularly in Treasury.

4. Modernize your own depreciation practices and urge that other companies do likewise.

5. Seek greater unanimity within industry's ranks on one proposal for reform.

The cause has been harmed in the past by the fervor with which adherents championed their method (and sometimes disparaged another). Probably any of several different approaches would do the job about equally well.

Politically wise observers urge that we get together on one technique because congressmen have been confused by conflicting claims.

How to Improve Your Own Depreciation Practices

1. Take what the law allows in methods permitting faster writeoff in earlier years.

a. 25.1% of metalworing firms still follow slow straight line method. (According to a STEEL survey of 700 companies.)

b. 32.8% of metalworking takes the faster sum-of-years-digits method.

c. 42.1% of metalworking takes fastest double declining balance method.

2. Take what the law allows in initial writeoff.

a. 43.8% of metalworking still does not.

b. 56.2% of metalworking does.

3. Combine the two because:

	With a ten-year life you'll get this percentage written off in first year using	But combining your regular writeoff method with the initial allowance will give you
Double declining balance	20%	36%
Sum-of-digits	18.2%	34.6%
Straight line	10%	28%

Pick Your Method

To help you make up your mind, STEEL queried 700 metalworking executives on their preference (see the exhibit on Page 40). The editors made the same survey more than a year ago (Mar. 2, 1959, p. 69). The same four methods are the most popular, in the same order of popularity.

The percentage of adherents for the bracket system has increased slightly—from 40.1 a year ago to 41.7 now.

Machinery & Allied Products In-

Industry Votes on Reform

Question: How can we get new depreciation laws?

Answer: **Present a more united front to Congress on the kind of reform industry wants.**

Question: What does industry want?

Answer: **Metalworking* prefers one of these four plans:**
(*Based on 700 companies polled by STEEL.)

41.7% prefer the bracket system

This would abandon the concept of useful lives. Substituted would be brackets or maximum and minimum limits for 10 or 15 categories of depreciable property, as in Canada. You could pick any year within the bracket.

21.7% prefer the MAPI plan

Developed by Machinery & Allied Products Institute, this one would retain the present useful life concept, but allow faster writeoffs by the triple rate declining balance method.

17% prefer reinvestment depreciation

When the property is retired, you can deduct from earnings the difference between its value in current dollars and its cost at the time it was acquired. The deduction would be allowed if an equivalent investment is made within two years of retirement.

15.5% prefer the initial writeoff

This would permit you to write off 20 per cent of the cost in the first year of acquisition. Present laws allow this for corporate taxpayers on property when cost doesn't exceed $10,000.

4.1% want no reform

stitute (MAPI) proponents slipped percentagewise—from 37.7 to 21.7.

Those favoring reinvestment depreciation jumped from 12.7 per cent of the total to 17.0 per cent.

The faction for initial allowance made the biggest gain—from 1.8 per cent in 1959 to 15.5 per cent in 1960.

No method has the majority's support. But the race has narrowed down to the above four. Last year, 7.7 per cent of the respondents backed about a dozen other proposals.

Here is what each of the four most popular methods would do:

• **Bracket Plan**—Based on industry and Treasury statistics and studies, the bracket for machine tools would be seven to ten years. Most durable equipment would be in the five-to-ten year bracket. Buildings and fixed installations would be in the 20-to-30 year group. Original cost would be the basis for computations.

Of the four major reform suggestions, the bracket proposal makes the sharpest departure from present methods. Its principal architect is Joel Barlow, Washington lawyer.

• **The MAPI Plan** — The second most popular method of reform was developed by Machinery & Allied Products Institute's research director, George Terborgh. Its major advantage would be to stop capital erosion without being a radical departure from present practices.

• **Reinvestment**—This one was developed by Maurice E. Peloubet, a New York accountant. Reinvestment would work under the present Bulletin F setup or under a bracket system. Needed: Close cost accounting and an index—such as the Commerce Department's construction index.

• **Initial Writeoff**—This one could be enacted by changing a few words in Section 179 of the Internal Revenue Code. It allows you to write off 20 per cent of the cost of depreciable property if the deduction is taken in the year of acquisition and the cost of the property does not exceed $10,000. (The limit is doubled in the case of a husband and wife filing a joint return. Each partner in a partnership may also claim $10,000.)

The reform would remove the $10,000 ceiling.

We may not agree on the method of reform, but nearly all of us agree that reform is needed. Most of us would echo this comment from MAPI's president, Charles W. Stewart:

"A major overhaul of the tax structure is absolutely prerequisite to the continued health and growth of this country."

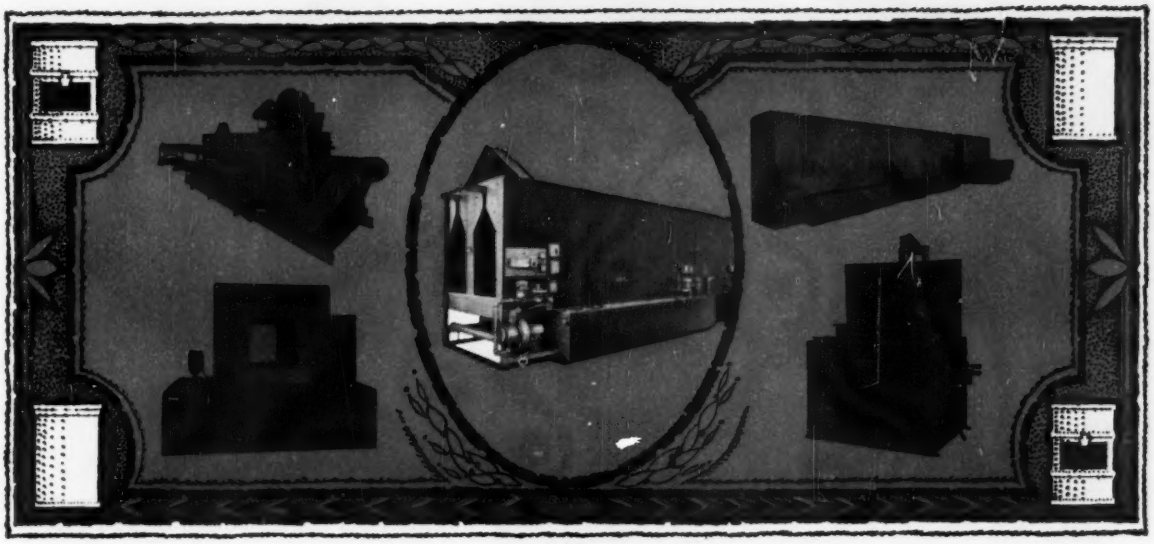
Production Efficiency

How to Engineer It

On May 16, STEEL will deal with this matter, including the problem of who pays for engineering. For a free copy of any or all articles in this Program for Management (running every other week since Jan. 11), write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio. By using material like this, you may win $1000. For details, see Pages 5 and 6.

HOW WELL

are you investing metal finishing dollars?



If you're running a medium-sized appliance manufacturing plant, you probably spend about $100,000 a year on chemicals to prepare metal surfaces for finishing. And you're using these chemicals in automatic equipment that may have cost you two million dollars or more.

The secret of getting the most out of your investment is to make sure your machines and chemicals are *working together* as they should. This is what you get when you take advantage of Pennsalt's System Approach to metal surface preparation.

Because Pennsalt supplies complete lines of both chemicals and equipment, we can treat your metal finishing line as an *integrated system* . . . make your investment pay off in high-speed production, top product quality and low cost per unit. We make sure you continue to get top performance too, through the Pennsalt Metal Preparation Service Plan.

We'll be happy to show you how this approach can make your metal finishing dollars work harder. Write for free booklet 340, "The Pennsalt Metal Preparation Service Plan".

Pennsalt Metal Finishing Equipment

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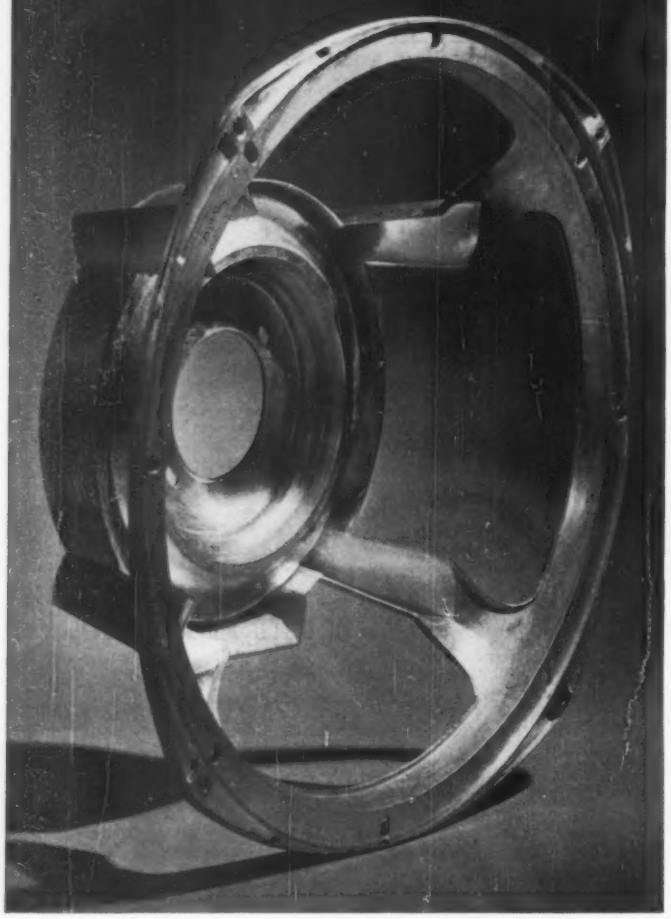

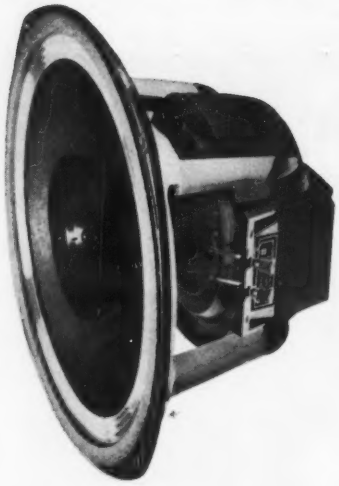

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This zinc die cast "basket" for the UNIVERSITY Model 312 Diffaxial 3-way High-Fidelity Speaker provides the improved design and production economies necessary for outstanding performance characteristics and moderate price of this newly designed speaker, made by University Loudspeakers, Inc.

Formerly an assembly of steel stampings, this one-piece design contains supports, flanges, slots, ribs, holes, studs and channels for permanent centering and mounting of the cone, magnet pot assembly and other components. Expensive spinning and other machining operations are eliminated and final speaker assembly requires fewer steps, resulting in significant production economies.

First prize winner in our "Lighter Than You Think" die casting contest, this frame weighs only 2 lbs. 12 oz. and measures 13" across corners. It is 4⅝" deep and has a minimum wall thickness of .040". The thin-wall, hollow struts are designed to offer minimum sound reflecting surfaces while providing the extreme rigidity required for mechanical stability of the entire structure. There is no loss of magnetic energy in this speaker since zinc is non-magnetic.

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HORSE HEAD PRODUCTS®

'61 Model Styling Takes Shape

GM will eliminate the knee knocker

LOOK FOR several styling changes in 1961 models of standard cars produced by General Motors Corp., Chrysler Corp., and Ford Motor Co. (Next week: The '61 look in compacts.)

Standard size GM lines will not have the curve in the front A post. Body shell components will continue to be broadly interchangeable—although suppliers are still getting prints indicating A-B-C bodies to avoid confusion.

• **Cadillac** — Transaxles won't be used until 1962. With one exception, GM's luxury division lineup remains unchanged. A four door, sports hardtop sedan, built on a 122 to 123 in. wheelbase, will be included. Basic models will be sharing an extended body shell with other GM lines. Width at the B post is reported as 78 in. Rear grilles will virtually disappear. The front end clothspin grille is being redone.

• **Buick**—Electra models are reportedly 2 to 3 in. shorter, about 2 in. narrower. Talk that a fourth model will be in the lineup seems to be unfounded, as is the rumor that series names will be changed in 1962. Stylewise, the V line of rear quarters will be straightened out to provide more luggage space. It means that fin lines are going to be flatter, following the basic style set by Pontiac and Oldsmobile this year. Double yoke, universal joints will be used on the propshaft, making for a constant velocity joint effect. It may mean the propshaft will be cut into three pieces.

• **Oldsmobile**—Rear quarter windows and longer roofs will distinguish the Olds 98 series. The car will get new rear quarters and a new grille, but the boxy styling approach will be the same. The economy 88 series reportedly will be slightly shorter.

• **Pontiac**—A cutback in the number of models is rumored. An economy carburetor, valve train, and axle ratio package will be available—so will a high performance package. The flat rear quarter and cowl front end appearance will continue. Grille is new.

• **Chevrolet** — Major sheet metal changes are programed. The gull wings in the rear will be missing, and the rear deck lid and front fenders will be revised. A different seating arrangement is scheduled for basic lines.

Chrysler—Dart Sets Trend

Next year will be the last for fins on Chrysler cars. Starting in 1962, the corporation will switch to Valiant styling, but fin lines on 1961 models will more closely follow the Dart look. All cars will go with alternators instead of generators next year.

• **Imperial**—The engine lineup and wheelbase will not be changed. Rear quarters will be only slightly altered. Front fenders will be squared off a little more, and a new grille is programed. There's talk that a slightly smaller series (built on the regular Chrysler car wheelbase) will be added to the Imperial lineup. It's supposed to be a hot luxury sports model.

• **Chrysler**—Minor facelift is the word. The New Yorker is supposed to be a few inches shorter. Fins will be reworked to ease into a flatter style line. Chrysler is supposed to keep its basic grille, although there will be a few alterations. Reports that Chrysler and Imperial are moving to full unit body construction still aren't verified.

• **De Soto**—Some models in the line will be phased out, but the car will not be scrapped, although rumors about its demise persist. Apparent object: Turn De Soto into a tryout

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Chrysler's lines will have the Dart fin look

On the Fords, the fins are disappearing

car which Chrysler can use to test ideas it will later put into full production. The move will please the sports and performance minded buyers who make up a large percentage of De Soto owners. Rear quarter styling won't be changed much. A new grille will appear.

• **Dodge** — The Polara will be phased out, and Dodge will continue with the Matador and Dart series. With the addition of the compact Lancer, Dodge will again become a major line for Chrysler. Dart sales are accounting for 82 per cent of Dodge volume. Only minor changes will be made in the '61 version. The slant six engine with a diecast aluminum block is slated for the Dart. A Chrysler source says 10,000 six cylinder engines with diecast aluminum blocks are being installed in corporation cars and in taxicab fleets across the country. They will have centrifugally cast, gray iron dry liners. Sand cast aluminum and gray iron heads, as well as permanent molded aluminum heads, are being tested on these engines. A two-piece, diecast aluminum head is also under design.

• **Plymouth** — Chrysler's onetime leader in the low price field will get a major restyling in 1961. It looks like Chrysler may turn Plymouth into a sports type car, since there's little room for it as a standard economy type. Plymouth's fishtail fin will be cut down to Valiant size. The grille and taillight treatment will be new. Bucket, swing-out seats reportedly will be standard, and the instrument panel arrangement will be drastically changed, say company sources.

Ford's Fins Fading

The fin kick is about over in autodom's styling circles. Ford has been working its blades down for two years. They'll be practically gone on next year's models. Ford will place more emphasis on station wagons next year.

• **Lincoln**—The Premiere line will be dropped. Unitized bodies will be continued on the regular Lincoln. A smaller, continental, luxury car will be introduced. Stylewise, Lincoln will eliminate some of its side, sculptured steel, although rear quarters will be reworked only slightly.

• **Thunderbird** — Ford's onetime sports and experimental car is supposed to go to a stub frame unit body. It's going to be slightly longer and an inch higher but still retains the bucket seats and center mounted control panel setup. The grille will be redone — a convex toothed design.

• **Mercury**—The Park Lane series will be dropped. Regular Mercury lines will share the Ford body shell although the wheelbase will be 120 in. instead of Ford's 119 in. Bodies will be less than 80 in. wide at the center posts. Rear quarters will be reworked to further eliminate the side V appearance which some stylists say is too "chunky." A new grille is scheduled.

• **Ford**—Wheelbase is unchanged, but the car will get the full sheet metal treatment. Fins will be horizontal instead of angled. The bull's-eye taillights will be back. The grille will be changed to do away with the hobnailed effect.

U. S. Auto Output

Passenger Only

	1960	1959
January	688,731	545,757
February	659,323	478,484
March	654,242	576,085
3 Mo. Totals	2,002,296	1,600,326
April		578,825
May		546,817
June		557,994
July		555,418
August		239,152
September		258,157
October		507,530
November		254,527
December		494,931
Total		5,593,677

Week Ended	1960	1959
Mar. 26	137,385	121,832
Apr. 2	147,830	133,878
Apr. 9	133,460	133,202
Apr. 16	135,402	135,934
Apr. 23	145,220†	133,987
Apr. 30	147,000*	118,059

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

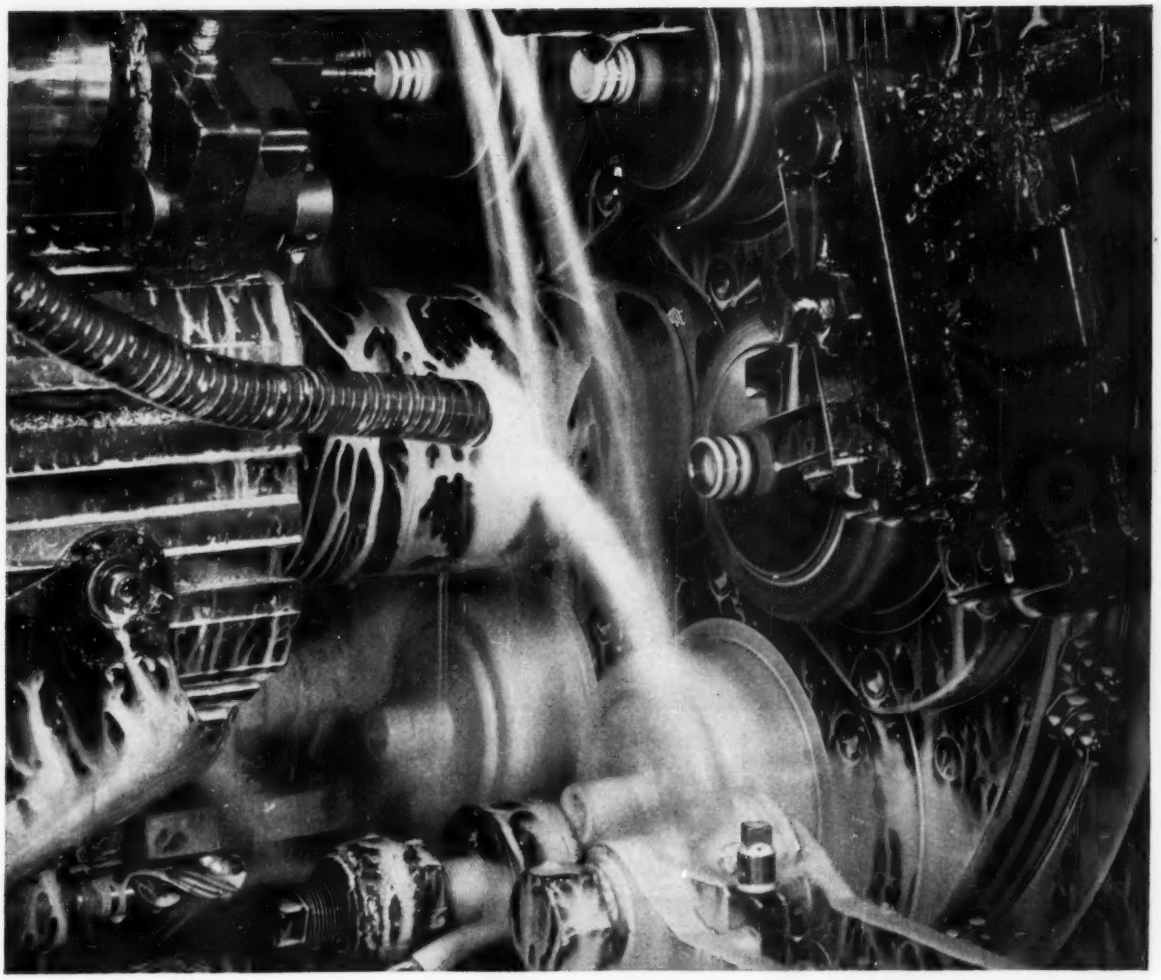

Photo courtesy SKF Industries, Inc.

SKF ... another bearing manufacturer specifies Electric Furnace quality

For critical applications such as anti-friction bearings, SKF requires steel of chemical and structural uniformity and unusual cleanliness. Minimum size and minimum frequency of non-metallic inclusions are also essential.

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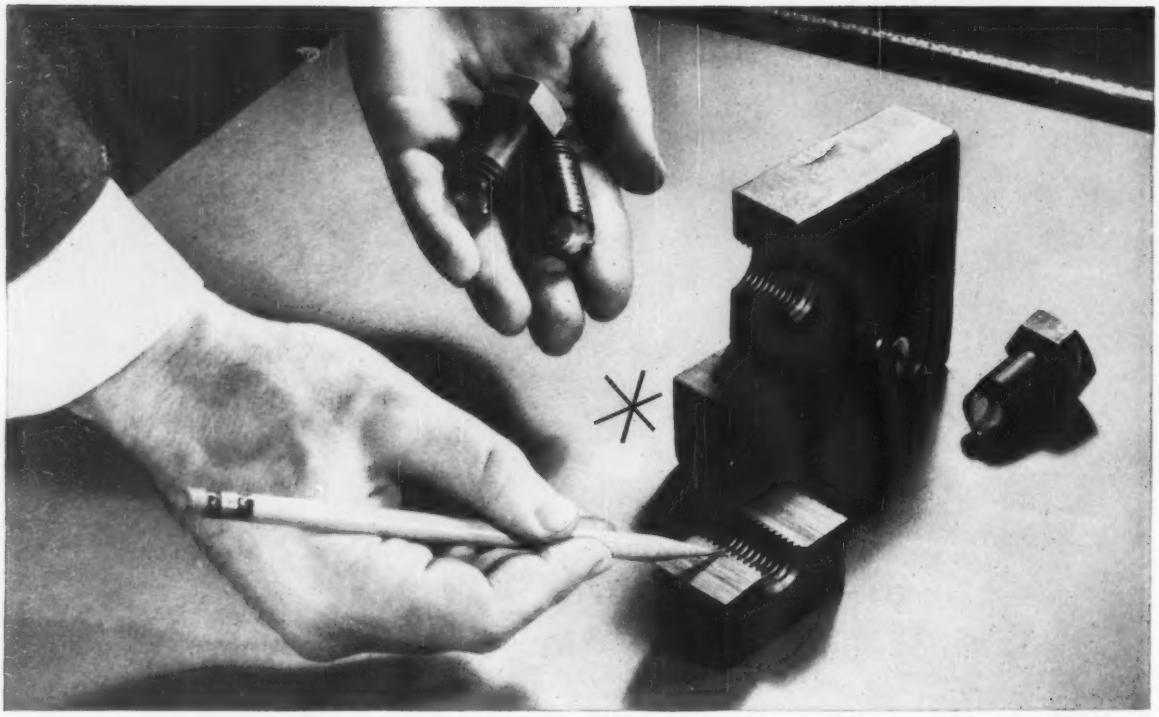


Showed way to save $7800

RB&W fastener survey of refrigeration unit suggested that hex screws be substituted for studs ... and castings be tapped with less costly clearance fit.

When there are no special design requirements or space clearance conditions, using studs of 1-inch diameter and smaller often penalizes the user needlessly. First, in direct costs, since the more economical *hex screws* will do the job. Second, in production costs, since studs require holes tapped with an expensive *interference* thread fit.

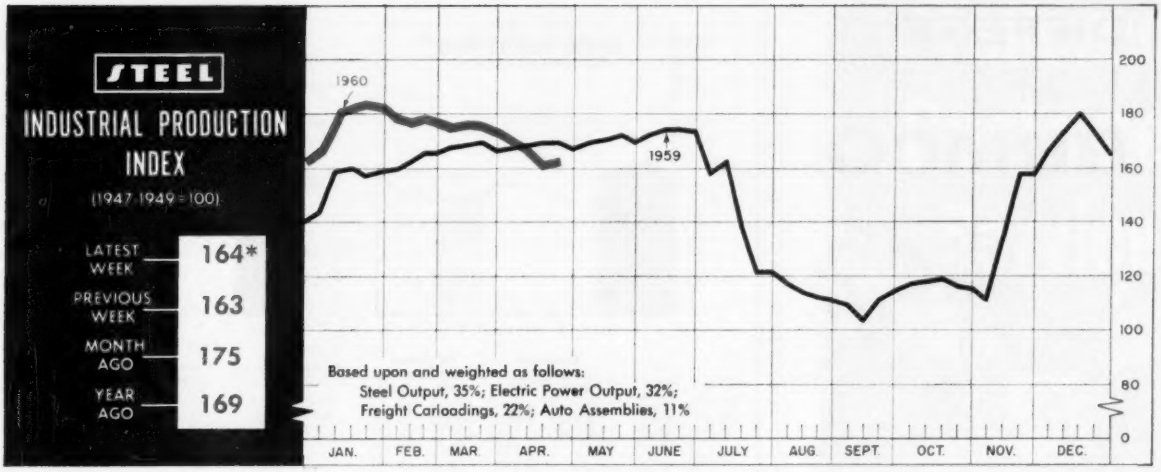
The RB&W Man pointed this out when his survey revealed over 250 stud fastenings per refrigeration unit. For this application, 250 hex screws cost $8.45 . . . for a saving of better than $22 over the studs and nuts. Annually this would total to $7800 . . . *clear profit.* And on top of this, reduced tapping costs, too.

Want to get the most from *your* fastener dollars? Ask for an RB&W man to make a survey. Contact Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

RB&W
115th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. Sales agents at: Cleveland, Milwaukee; New Orleans; Denver, Fargo. Distributors from coast to coast.

* *Specifying studs for fear that hex screws might damage castings during disassemblies is based on a groundless fear. Hex screws in threaded holes with clearance fit can be reused repeatedly without damaging the casting. In the test casting shown above, the hex screws were first tightened and removed 50 times—then torqued to breaking point. Cutaway section showed casting threads were still perfect, with no sign of stripping.*



*Week ended Apr. 23.

Index Reflects Spring Firmness

FOR THE FIRST TIME in six weeks, STEEL's industrial production index has turned up. It's not much of an upturn—only a point—and it may or may not be indicative of a trend, but the interruption of an almost continuous downtrend since January is as refreshing as a breath of spring air.

During the week ended Apr. 23, improvements in automotive output and railroad freight carloadings overcame a seasonal decline in the production of electric power, to boost the index to 164 per cent of the 1947-49 average. Steel production edged up from the previous week's schedule, but it had no effect on the index.

• **Chances for Holding** — The chance of the trend line remaining firm is "iffy." 1. If output of electricity responds fairly soon to normal seasonal influences. 2. If railroad freight carloadings pick up as much as shippers have predicted. 3. If auto production holds somewhere close to announced second quarter schedules. 4. If the production of steel does not go down too fast or too far. Fortunately, there is a good chance that all four "ifs" will come off about on schedule.

• **"If" No. 1**—Electricity generation is near its seasonal low. The normal pattern is for a pickup to set in during the first half of May, when the weather warms up and fans and air conditioners are turned on. By midsummer, residential, commercial, and industrial users will join forces to boost consumption of power about 1.3 billion kw-hr above the current level of 13.2 billion kw-hr a week.

• **"If" No. 2**—Freight carloadings are beginning to climb as both better weather and renewed shipping activity on the Great Lakes take hold. Steady improvement in this component of the index has kept the over-all total from declining even more than it has in recent weeks. Biggest gains are being scored in

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,261[1]	2,238	2,627
Electric Power Distributed (million kw-hr)	13,200[1]	13,263	12,538
Bituminous Coal Output (1000 tons)	8,780[1]	8,310	8,152
Crude Oil Production (daily avg—1000 bbl)	7,050[1]	7,032	7,132
Construction Volume (*ENR*—millions)	$758.2	$397.8	$375.6
Auto, Truck Output, U. S., Canada (*Ward's*)	181,737[1]	169,653	171,280
TRADE			
Freight Carloadings (1000 Cars)	635[1]	623	647
Intercity Truck Tonnage (changes from year ago)	−5.0%	−0.5%	+21.3%
Business Failures (Dun & Bradstreet)	308	333	304
Currency in Circulation (millions)[3]	$31,828	$31,827	$31,332
Dept. Store Sales (changes from year ago)[3]	+18%	+18%	+6%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$27,275	$25,071	$25,724
Federal Gross Debt (billions)	$288.9	$286.5	$285.6
Bond Volume, NYSE (millions)	$28.6	$21.0	$30.2
Stocks Sales, NYSE (thousands of shares)	14,969	10,451	17,788
Loans and Investments (billions)[4]	$101.3	$100.8	$95 5
U. S. Govt. Obligations Held (billions)[4]	$24.5	$24.4	$32.7
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	247.82
STEEL's Nonferrous Metal Price Index[6]	230.7	230.7	220.6
All Commodities[7]	120.0	120.1	119.9
Commodities Other than Farm & Foods[7]	128.6	128.7	128.1

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1960, 2,844,306; 1959, 2,831,846. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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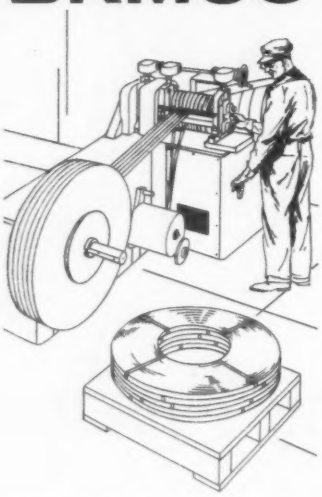

Pride of workmanship makes BRMCO aluminum, brass or bronze the quality material that can speed your production line, providing fewer rejects, longer tool life and less waste. With BRMCO metals, uniform quality of temper, gauge, width and grain size result in greater efficiency and lower metal working costs.

From the first analysis of raw materials right through casting, rolling, annealing, slitting and finishing operations, BRMCO's skilled craftsmen maintain standards that produce metals meeting the most exacting specifications. Holding a temper tolerance to within plus or minus three points on the Rockwell Scale is only one example of the ability of BRMCO's people.

Quality control at BRMCO assures a steady flow of uniform material to your production line, and BRMCO service supplies that metal on the exact date you specify.

We'll be happy to send you samples for your own testing and analysis. Simply write, or call collect.

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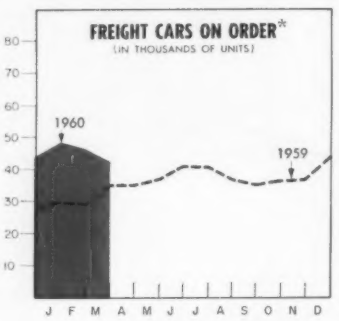
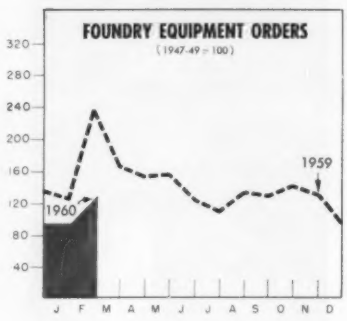
THE BUSINESS TREND





	Domestic Awards		Backlogs (end of month)	
	1960	1959	1960	1959
Jan.	7,149	4,102	48,170	29,470
Feb.	3,411	1,842	46,323	28 789
Mar.	1,959	10,782	42,131	35,487
Apr.	....	3,735	.....	35,479
May	....	5,203	.....	36 869
June	....	8,369	.....	40,973
July	....	4,159	.....	40,309
Aug.	....	1,653	.....	37,172
Sept.	....	943	.....	35,626
Oct.	....	2,722	.....	36,199
Nov.	....	2 424	.....	36,555
Dec.	....	10,560	.....	43,870
Total	....	56,494		

*Domestic only.
American Railway Car Institute.
Charts copyright, 1960, STEEL.

	1960	1959	1958
Jan.	95.5	127.4	57.9
Feb.	128.6	237.1	57.6
Mar.	....	166.6	85.9
Apr.	....	154.2	88.7
May	....	157.0	136.1
June	....	125.1	87.7
July	....	110.7	77.9
Aug.	....	134.1	74.1
Sept.	....	131.3	64.5
Oct.	....	140.8	118.9
Nov.	....	131.2	83.3
Dec.	....	95.9	137.0
Avg	....	142.6	89.1

Foundry Equipment Mfrs. Assn.

coal, ore, and miscellaneous product loadings, but the improvement will have to be even greater if the roads are to make up for ground lost during the winter. Weekly loadings have been running about 2 or 3 per cent behind the year-ago figures for several weeks.

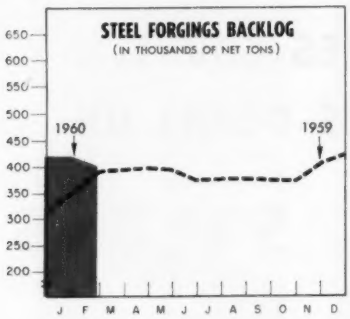
• **"If" No. 3**—Sales of passenger cars this year are going to be good. Production will also be good but not as high as many people predicted. The big push at the assembly line is over until new models come out in the fall, but it doesn't mean that second quarter will be dull. So far it is running well ahead of the corresponding 1959 period, and the gap could widen if the sales spurt which started in April continues in May. It is more likely, however, that fluctuations around the current level will be small as makers continue to adjust output to sales to contain inventories.

• **The Biggest "If"**—In the final analysis, the pace of the industrial production index will depend largely on what happens to the steel industry, which is operating at just below 80 per cent of capacity. Many observers feel output is about equal to consumption. But there are indications that some consumers, notably motordom, are eating off the shelf. If inventory reduction goes much farther, it could cause the operating rate to drop to 75 per cent or lower. If the development comes rapidly—before some of the seasonal uptrends mentioned above have a chance to develop—STEEL's business trend line could dip into the 150s. However, most steelmen feel the cutbacks will be in the nature of a half point or so a week for several more weeks until the bottom is hit during the summer vacation period.

Appliance Sales Good

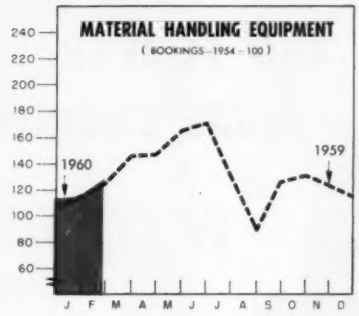
Rumors to the contrary, appliance makers are still confident that this will be a better year than 1959—and last year was one of the best. Some layoffs have gained headlines lately, but the real stories have been behind the headlines.

On Apr. 11, Maytag Co., Newton, Iowa, laid off 275 workers, whose seniority dated back only to last September. Even then, production was still as high as at any time in 1959, which was a record year for the company. By last week, 75 workers had been rehired. Company



	Shipments 1960	Shipments 1959	Unfilled Orders 1960	Unfilled Orders 1959
Jan.	123	113	420	353
Feb.	130	113	399	392
Mar.	...	129	...	396
Apr.	...	136	...	398
May	...	142	...	394
June	...	140	...	375
July	...	103	...	377
Aug.	...	98	...	376
Sept.	...	103	...	374
Oct.	...	97	...	373
Nov.	...	87	...	405
Dec.	...	114	...	420

U. S. Bureau of the Census. Data based on reports from commercial and captive forge shops with monthly shipments of 50 tons or more.



	1960	1959	1958	1957
Jan.	114.96	115.84	93.07	126 34
Feb.	128.74	124.77	93 49	139.29
Mar.	.....	146.36	97.89	140.76
Apr.	.....	147.28	122.36	132.67
May	.....	164.45	118.04	157.95
June	.....	170 72	131.15	121.57
July	.....	130.26	134.34	128.31
Aug.	.....	87.02	104.46	110 09
Sept.	.....	126.43	85.41	116 79
Oct.	.....	131.09	111.35	124.80
Nov.	.....	124.16	110.88	87 80
Dec.	.....	113.78	105.97	105.65
Avg	.....	131.85	109.87	124.34

Material Handling Institute Inc.

officials are "quite optimistic" about chances for a gain in 1960 over 1959.

Westinghouse Electric Corp. laid off 400 workers last month at its Mansfield, Ohio, appliance plant to adjust its product mix and to help cut down on over-all inventories. At the same time, the company added to its payroll at the Columbus, Ohio, plant, leaving its over-all employment about even. Says John Craig, vice president: "Our employment is higher than it was a year ago. But inventories in certain lines are up. We stepped up output before the steel strike, especially in built-in ranges. After the strike, inventories throughout the pipeline were pretty good. Then housing dropped off, and builders found their inventories too high. We are cutting back now to correct this. We still look for a 5 per cent gain in 1960 over 1959."

Sales of home laundry equipment turned up late in March, sending the month ahead of February in total sales. "We don't say this constitutes a trend," states Guenther Baumgart, president of the American Home Laundry Manufacturers' Association. "But retail sales are holding up well, especially in view of the bad weather we had in March. Factory production of most lines—except air conditioners and refrigerators—has turned down in April and May in every year since 1956. This year is no exception."

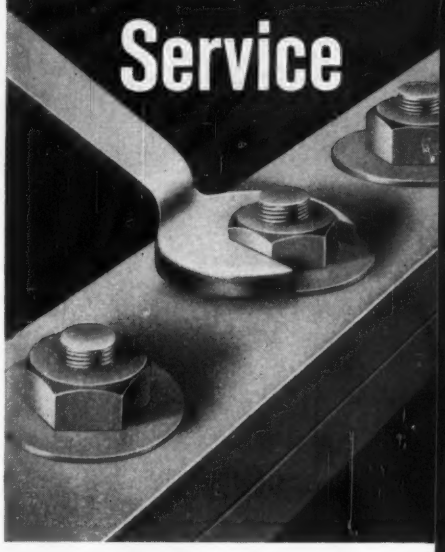
Producers of gas appliances see no letdown this year. Shipments of gas ranges should top 2.3 million units, says A. B. Ritzenthaler, chairman of the domestic gas range division of the Gas Appliance Manufacturers Association and vice president of Tappan Co., Mansfield, Ohio. Last year's total was slightly above 2 million.

Installations of gas water heaters this year will climb to 3,150,000 units, surpassing last year's record 2,953,000, declares D. W. Proulx chairman of GAMA's gas water heater division and national products manager for water heaters of the Rheem Mfg. Co., Chicago.

The big reason for such confidence is the continuing rise in personal income. In March, it rose to a record $393.5 billion (annual rate, seasonally adjusted). Also, most economists feel there is room for expansion in consumer credit. Indications are that consumers are not only able but also willing to boost their spending.

News for
HEAVY INDUSTRY...

Tailored Customer Service



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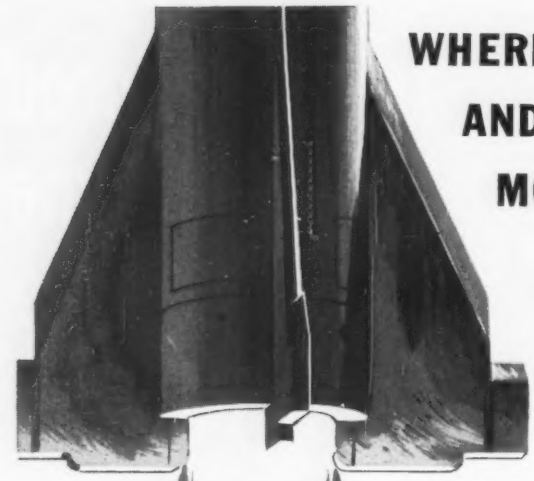

WHERE INCREASED TENSILE, IMPACT AND TEMPERATURES COUNT... MORE ENGINEERS COUNT ON

MIDVAC STEELS

Where maximum reliability and minimum rejects, due to failure to meet mechanical properties, must be attained... more and more engineers are specifying Midvac super alloy steels.

The Midvac process of consumable electrode melting eliminates atmospheric contamination, ingot soundness is improved, segregation is reduced and workability is increased. Ingots and billets produced for missile components, jet engine and aircraft parts and super bearings show increased tensile strength and impact, improved stress rupture at elevated temperatures and longer fatigue life.

The table below shows just a few of the many super alloys being processed by Midvac. Our metallurgical engineers are ready to help you select or specify the Midvac Steel to meet your requirements. Write for complete technical data.

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NICETOWN, PHILADELPHIA, PA.
SUBSIDIARY OF HEPPENSTALL COMPANY — PITTSBURGH, PA.
Plants: Pittsburgh, Pa. • Bridgeport, Conn. • New Brighton, Pa.

Alloy	Melting Process	Yield Strength .2	Ultimate Tensile Strength	Percent Elongation	Percent Reduction of Area
A-286	Air Melt	99,000 psi.	132,300 psi.	9.0%	14.7%
	Midvac	117,000 psi.	150,500 psi.	21.3%	33.8%
Gannalloy	Air Melt	112,000	159,900	13.0%	21.0%
	Midvac	142,600	177,250	18.0%	31.6%
D6A-C	Air Melt	234,800	281,000	4.9%	20.6%
	Midvac	256,700	294,250	9.6%	28.4%
Tricent	Air Melt	238,600	284,500	6.1%	19.7%
	Midvac	254,300	291,600	10.3%	25.6%

Properties shown are averages of 25 heats

MH *Midvac Steels*

FRANK M. WEINHOLD JR.
Unit Drop Forge gen. mgr.

ROBERT H. BRUCE
Gisholt v. p.-sales

RICHARD E. KRAFVE
Raytheon president

W. R. TIMKEN
Timken Roller Bearing pres.

Frank M. Weinhold Jr. was promoted from assistant manager to general manager of **Unit Drop Forge Div.**, Fuller Mfg. Co., Milwaukee, subsidiary of Eaton Mfg. Co. He succeeds **Edward L. Block**, retired. **George J. Houting** was promoted from purchasing agent of the division to assistant manager; **Edward J. Wink** from assistant purchasing agent to purchasing agent.

Gisholt Machine Co., Madison, Wis., elected as vice presidents **Harvey A. Waddell** who continues as treasurer; and **Robert H. Bruce**, former general sales manager, now vice president-sales.

Frank O. Riley succeeds the late **Leo R. Schreiner** as general manager, **Ternstedt Div.**, Detroit, General Motors Corp. He was director of engineering and sales for the division.

AC Spark Plug Div., Milwaukee, General Motors Corp., appointed **Richard G. Doyen** director of design reliability assurance, **Niels Christensen** reliability systems manager, and **Dr. Austin J. Bonis** director of reliability research and education.

George L. Innes was elected vice president-sales, **Michigan Chemical Corp.**, St. Louis, Mich.

Daystrom Inc., Murray Hill, N. J., named **Roswell W. Gilbert** director of corporate research. He was vice president of research and development for Daystrom's Industrial Products Group. Headquarters for the enlarged research organization will be in West Caldwell, N. J.

Richard E. Krafve was elected president, **Raytheon Co.**, Boston, and **Charles F. Adams** was elected to the new post of chairman. Mr. Krafve succeeds Mr. Adams. He was executive vice president. Before joining Raytheon in 1959 as group vice president-commercial, Mr. Krafve was vice president of Ford Motor Co.

William R. Hough, vice president-engineering, **Reliance Electric & Engineering Co.**, Cleveland, was assigned to a new post as vice president of research, development, and engineering.

Raymond B. Carey Jr. was named general manager, **Electro Dynamic Div.**, General Dynamics Corp., in Bayonne, N. J. He succeeds **John F. Thurston**, General Dynamics vice president, who was recently named head of special projects of the corporation's New York headquarters.

Edward S. Fraser was elected vice president - manufacturing, **Chicago Bridge & Iron Co.**, Chicago. He has been in charge of the company's manufacturing operations for the last six months. Previously, he served as assistant general sales manager of the company and manager of its Salt Lake City, Utah, plant.

Firth Sterling Inc. appointed **Lewis W. French** buyer of engineering products in the Purchasing Dept. of the firm's Pittsburgh headquarters. He was buyer for M. W. Kellogg Co.'s Hopkins Div., Jersey City, N. J., purchased by Firth Sterling last year.

W. R. Timken was elected president of **Timken Roller Bearing Co.**, Canton, Ohio, to succeed **D. A. Bessmer**, who resigned because of ill health. Mr. Timken served on the finance, executive, and policy committees before his election in March as acting president.

William Blandy was made manager of manufacturing of **Hitemp Wires Inc.**, Westbury, N. Y. He replaces **William W. Crossman**, reassigned by the company. Mr. Blandy was production manager for Cornish Wire Co.

Russel H. Meyer was appointed sales manager, Telecontrol Div., **Hancock Industries Inc.**, Jackson, Mich.

James O. Woodbridge joined **National Forge Co.**, Irvine, Pa., to serve as atomic, missile, and chemical products manager. He was reactor project engineer for General Electric Co.'s aircraft nuclear propulsion project in Cincinnati.

D. W. Walker was appointed assistant product sales manager of extrusions for **Kaiser Aluminum & Chemical Sales Inc.**, Oakland, Calif. He was Philadelphia district sales manager.

Roy F. Cooper, chief engineer of **Sargent Engineering Corp.**, with headquarters in Huntington Park, Calif., was made vice president-engineering.

John M. Jurist was promoted to the new post of West Coast district manager for the **POP Rivet Div.** of

FRANK V. JASIENSKI RICHARD H. DOBBINS
Albion Malleable Iron plant managers

WILLIAM H. DICKINSON DAVID E. WALBERT
Midland-Ross executive appointments

United Shoe Machinery Corp., Shelton, Conn.

Albion Malleable Iron Co., Albion, Mich., named new plant managers: **Frank V. Jasienski**, former operations manager at Albion, becomes manager of the recently acquired Muncie, Ind., plant. **Richard H. Dobbins** was named plant manager at Albion.

Ray D. Gardner was appointed chief engineer, **Horkey-Moore Associates**, Torrance, Calif., subsidiary of Houston Fearless Corp. He was with Northrop Corp.

William Staecker was named to the new post of technical director of **Bliss-Henschel GmbH**, Dusseldorf, West Germany, jointly owned by E. W. Bliss Co. and Henschel-Werke GmbH.

Robert F. Ryan was made Midwestern Operating Div. manager of **Kelite Corp.** in Chicago.

W. C. Henderson was made manager-utility sales; **A. W. Leighton** manager-industrial sales, Los Angeles district, **Allis-Chalmers Mfg. Co.**

Edwin F. Lord was appointed assistant general sales manager, Eastern Div., **Colorado Fuel & Iron Corp.** He is in New York. Mr. Lord was general sales manager for CF&I's Claymont Steel Products Dept. at Claymont, Del.

R. C. Crowe, sales manager, New York district, was made manager of product sales, **Wolverine Tube Div.**, Calumet & Hecla Inc. He is now at administrative offices in Allen Park, Mich.

William H. Dickinson was appointed a vice president of **Midland-Ross Corp.**, Cleveland, and general manager of its Owosso, Mich., Div. He succeeds **David E. Walbert**, promoted to group vice president of Midland-Ross in charge of the Owosso, Cleveland, Ross Engineering, Waldron-Hartig, and Ross Engineering of Canada Ltd., divisions. Mr. Dickinson was general manager of Electric Motor Div., A. O. Smith Corp., at Tipp City, Ohio.

Robert E. Wolff was elected vice president-marketing, **Van Straaten Chemical Co.**, Chicago. Before joining Van Straaten last year as general sales manager, he was sales manager, Tool & Instrument Div., Illinois Tool Works.

Glenn F. Whiteley was made assistant to the president of **Howe Sound Co.**, New York. He was general manager of Heppenstall Co., Bridgeport, Conn.

Paul J. Selinger was made assistant general sales manager, **Standard Tube Co.**, Detroit. He was manager of stainless sales and product development.

Dwight E. Schurman was named general superintendent of the Seattle steel and aluminum service plant of **Joseph T. Ryerson & Son Inc.** He succeeds **Chris A. Papadinoff**, now general superintendent of the firm's plant in Boston.

Glen R. Pierce was named manager of the newly created Distributor Sales Div. of **Dearborn Chemical Co.**, Chicago.

Albert J. Wein was made vice president in charge of the Non-Ferrous & Nickel Alloy Div., **Tube City Iron & Metal Co.**, Glassport, Pa.

William J. Bennett was made national field sales manager, Coated Abrasives Div., **Behr-Manning Co.**, Troy, N. Y.

Gordon A. McAlpine was made market manager, industrial and automation products, **Radio Corp. of America**, Camden, N. J. For the last 13 years, he has been with the Industrial Sales Div. of Ex-Cell-O Corp.

Robert K. Warren was made vice president-sales, Steel Div., **Firth Sterling Inc.**, Pittsburgh. **John S. Roller**, previous sales executive, was promoted to assistant to the president.

Albert E. Juram was made New York district sales manager; **Dale Cap** Chicago district sales manager for **Disston Div.**, H. K. Porter Company Inc.

Joseph T. McCarthy was named to the new post of labor relations manager, Industrial Relations Dept., **Blaw-Knox Co.**, Pittsburgh.

Dr. Sidney J. Stein, director of research and engineering for **International Resistance Co.**, Philadelphia, was elected a vice president.

William C. Goeckel was made director of sales, **Elwood M. Keifer** assistant to the director of sales, **Snyder Corp.**, Detroit. Mr. Goeckel succeeds **George Whitehouse**, who retires as vice president-sales.

Jean A. Chabot was named field engineer, New England area, for **Denison Engineering Div.**, American

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Bohn plant manager

ROBERT P. INGOLS
joins Designers Metal Div.

O. CLEVELAND LAIRD JR.
Moog Servocontrols div. sales

CHARLES H. SCHMINKE
U. S. Expansion Bolt post

GEORGE LAWRENCE
Heppenstall plant supt.

SHELDON G. LITTLE
GMC Truck & Coach post

Brake Shoe Co. He is in Manchester, Conn.

Charles H. Schminke was made general sales manager, **U. S. Expansion Bolt Co.**, York, Pa. He was marketing manager.

George Lawrence was appointed superintendent of the new New Brighton, Pa., plant of **Heppenstall Co.** He was methods engineer at the main plant in Pittsburgh.

Gerard F. Hart was made materials manager, **Gifford-Wood Co.**, Hudson, N. Y., in charge of production and inventory control as well as director of purchasing and traffic. **Allan B. Colby** succeeds Mr. Hart as purchasing agent.

William G. Evans was appointed project manager for **Westinghouse Electric Corp.'s** thermoelectric program. Mr. Evans is studying industrial management at Massachusetts Institute of Technology. He will assume his new duties at Cheswick, Pa., in June.

Sheldon G. Little heads the new Product Reliability Dept. established by **GMC Truck & Coach Div.**, General Motors Corp., Pontiac, Mich. He was the division's assistant chief engineer. He will be assisted by **C. C. Hursey**, chief inspector, and **Robert C. Kennedy**, former product reliability engineer, Engineering Dept.

J. D. Greensward was elected president, **Canadian Allis-Chalmers Ltd.**, subsidiary of Allis-Chalmers Mfg. Co., Milwaukee. He succeeds **Harold M. Schudt**, named director of manufacturing, Allis-Chalmers International. Mr. Greensward was director of manufacturing, Allis-Chalmers Industries Group, and a company vice president.

John J. Mlynski was made plant manager of **Clark Equipment Co.'s** Central Parts Div. in Chicago.

Stanley M. Smolensky was appointed executive director of marketing at **Thiokol Chemical Corp.'s** Reaction Motors Div., Denville, N. J.

Walter Nester was made manager of **Bohn Aluminum & Brass Corp.'s** Plant No. 16 at Holland, Mich. He has served for the last seven years with Bohn in various engineering capacities.

Robert P. Ingols joined **Designers Metal Div.**, North American Cement Corp., Hammond, Ind., as vice president-sales. He was manager of Penn Metal Corp.'s Expanded Metals Div.

O. Cleveland Laird Jr. was appointed sales manager, Industrial Div., **Moog Servocontrols Inc.**, East Aurora, N. Y. He formerly served as purchasing agent for Basco Inc.

Allis-Chalmers Mfg. Co.'s Control Dept., Milwaukee, named **Richard W. Fugill** supervisory engineer, Special Control and Regulator Group; **Eugene R. Johnson** supervisory engineer, Metalworking and Mill Control Group; and **Rodney D. Dennis** assistant to the manager, product sales. **Robert L. Halsted** was made manager, Milwaukee district, Industries Group.

Gene M. Prioli was named assistant superintendent, Electric Furnace Dept., of **Bethlehem Steel Co.'s** Pacific Coast Div., Los Angeles.

Goodyear Tire & Rubber Co.'s Metal Products Div., Akron, appointed **F. R. Tully** plant superintendent; **D. R. Shuster** chief engineer, replacing Mr. Tully.

Harold L. Thompson was named head of the Dryer Assembly Dept. at **Maytag Co.'s** Plant 2 in Newton, Iowa. He succeeds **Eugene A. Nicol**, recently made superintendent of production at the plant.

OBITUARIES...

R. E. Brooks, 77, a founder of **Cleaver-Brooks Co.**, Milwaukee, died recently. He had been serving as chairman.

Ralph J. Hess, 63, superintendent of the die and tool room of **Steel Improvement & Forge Co.**, Cleveland, died recently.

Daniel F. Ahlberg, 62, executive engineer and export manager of **Michigan Tool Co.**, Detroit, died recently.

Rollpin won't mushroom or telescope

There are no installation or removal problems with Rollpins. Because of their column strength they can be readily driven with a hammer, removed with a punch without bending or collapsing. Of course production line tooling such as an arbor press, a pneumatic hammer . . . even a hand riveter . . . is ideal for Rollpin insertion.

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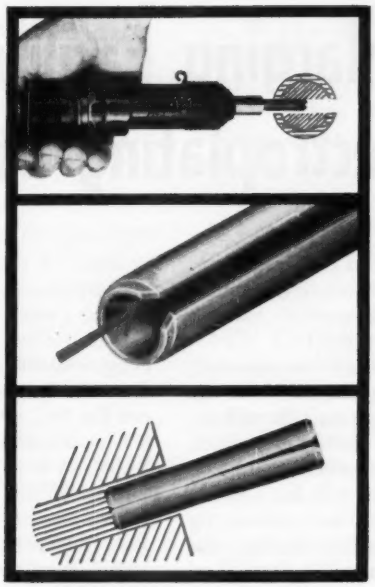
With smoothly chamfered ends providing an easy lead-in, Rollpin is compressed into complete conformity with the shape of the hole. The exclusive, v-shaped, coped corner design eliminates possibility of damage to the hole walls. They prevent any possible scoring action as the pin is driven and insures uniform insertion and removal characteristics. The benefit to you: the same pin can be reused in the same hole.



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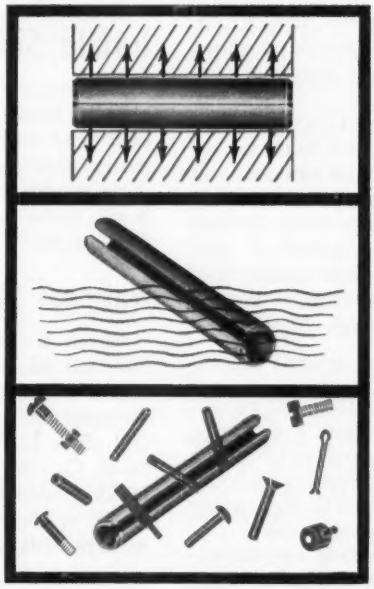

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J&L Enlarging Facilities For Electroplating Strip

JONES & LAUGHLIN Steel Corp., Pittsburgh, is constructing another halogen type electrolytic tinning line at its Aliquippa (Pa.) Works. The Tin Plate Dept. is operating two halogen lines and will start the new line late this year. (It will replace an alkaline tinning line which has been in service since 1943.)

A looping tower will be incorporated at the entry end, permitting full speed operation during the welding cycle, says A. C. Keller, works manager.

The new line also will feature a high frequency brightening process which brightens the product through the use of 2400 kw of electricity. This improvement also has been included in J&L's other electrolytic lines.

Silicon rectifiers will replace copper oxide rectifiers which were used in older lines in the plating of pure tin to the strip steel.

Another innovation will be horizontal pickling on two levels to conserve floor space. The new line will be 275 ft long (compared with 456 ft for the No. 3 line which is similar except for the horizontal pickling feature). It will handle coils of strip steel in widths ranging from 18 in. through 37 in., and up to 80 in. OD.

• **More Stainless**—J&L also has announced it has placed in operation a new annealing and pickling line at the Youngstown plant of its Stainless & Strip Div., virtually tripling stainless steel production capacity at that plant. The line can handle 8, 12, and 24 in. widths of stainless in one, two, or three strand operations.

National-Standard Grows

National-Standard Co., Niles, Mich., and its foreign subsidiaries are spending about $4.5 million on projects to be completed by next spring to increase manufacturing capacity and improve operations. About $2.5 million is being spent in domestic plants for new facilities and equipment. About $1 million will be spent by National-Standard Co. of Canada Ltd. to build and equip a 40,000 sq ft plant in Guelph, Ont. In England, National-Standard Co. Ltd. will spend about $500,000 to diversify operations and add 24,000 sq ft of manufacturing area. Up to $500,000 will be spent in other overseas locations, including Port Elizabeth, South Africa; Cologne, West Germany; and Mexico City, Mexico. The company recently assumed a minority interest in Cables Mexicanos SA, Mexico City. National-Standard produces high carbon flat steels, industrial wire cloth, perforated metals, special machinery, fine wires, and metal lithography equipment.

Installs Sinter Plant

A continuous, iron ore sinter plant is being erected at Interlake Iron Corp.'s plant in Chicago. Capacity: 3360 tons of sinter a day. It is being built by Dravo Corp., Pittsburgh, under license from Lurgi Co. of Germany.

National Steel Expanding

Work has started at Weirton, W. Va., on construction of a research and development center for National Steel Corp. and a general office building for its Weirton Steel Co. division. The research building will provide initially about 50,000 sq ft of space while the office building will contain 150,000 sq ft.

Copes-Vulcan Leases Plant

Copes-Vulcan Div., Blaw-Knox Co., is expanding its manufacturing facilities in Erie, Pa., into a plant formerly occupied by the Plastics Div., Erie Resistor Co., that city. Production of some of the parts for Copes-Vulcan's line of powerplant equipment and of valves for nuclear power installations are being transferred to the newly leased facilities at 1345 W. 12th St. Division offices and principal manufacturing facilities will remain on W. 26th Street.

Forms Western Subsidiary

U. S. Expansion Bolt Co., York, Pa., has organized a subsidiary, Western Expansion Bolt Co., 52 Zoe St., San Francisco, Calif. L. W. Diaz is manager of the new organization which will market a line of expansion bolts and masonry fasteners.

Republic Buys Facilities

Republic Steel Corp., Cleveland, has bought a government-owned blast furnace at its Youngstown plant and a sintering plant at Warren, Ohio. Both facilities were built during World War II and have been operated by Republic.

Arcwire Expands Plant

Arcwire Corp. is enlarging its Mt. Carmel, Pa., plant to supply the growing needs of the stainless steel and aluminum products industries for welding wire. Arcwire, a subsidiary of Arcos Corp., Philadelphia, draws welding quality stainless steel and aluminum wire.

ASSOCIATIONS

Lead Industries Association, New York, elected Jean Vuillequez, American Metal Climax Inc., New York, president. The following were elected vice presidents: Joseph A. Costello, Ethyl Corp., New York; Charles R. Ince, St. Joseph Lead Co., New York; Simon D. Strauss, American Smelting & Refining Co., New York. Robert L. Ziegfeld continues as secretary-treasurer.

The national steering committee, comprising representatives from eight of nine chapters of the **Society of Aircraft Materials and Process Engineers,** approved formation of a new society to be known as the **Society of Aerospace Material & Process Engineers.** Election of officers will be held this fall.

The Society of the Plastics Industry Inc., New York, has formed an **Industrial Container Institute.** Offi-

cers elected: Chairman, Jerome S. Heisler, Delaware Barrel & Drum Co. Inc., Wilmington, Del.; vice chairman, B. Neal Harris Jr., Hedwin Corp., Baltimore; chairman, Institute Specifications Committee, Richard S. Griffith, Plax Corp. Bloomfield, Conn.

NEW PLANTS

Westprest Inc., a large custom stamping plant, has been established as a subsidiary of **Worcester Pressed Steel Co.**, Worcester, Mass. Facilities of the new firm are at 523 N. Bivins Ave., Amarillo, Tex., and were set up through acquisition of two adjoining metal fabrication plants: Speedy Mfg. & Sales Corp. and Orna Metal Co. Westprest's metal fabrication facilities are being expanded with additional stamping machinery. Paul Cook is president of Westprest Inc. while C. G. Page is works manager of the Amarillo plant.

Linde Co., a division of Union Carbide Corp., New York, will place in operation soon its continuous welded rail plant at Birmingham. It is on a site adjacent to the Ensley Steel Works of Tennessee Coal & Iron Div., U. S. Steel Corp.

Linde also announces that it will spend $50 million over the next year building or expanding 16 oxygen plants, including 11 to be built adjacent to steel mills. Each of the plants will be capable of turning out nitrogen and several will also be tapped for argon. When completed, the 16 plants will add 4000 tons a day of oxygen making capacity to Linde's present capacity. Six of the plants had been announced previously by Linde. Of the 10 newly announced plants, two will be built next to mills operated by Republic Steel Corp., one next to a plant owned by Detroit Steel Corp., one near a mill operated by Bethlehem Steel Co., one next to a mill of Great Lakes Steel Corp., one near a mill of Colorado Fuel & Iron Corp., one at a U. S. Steel mill, and three at locations other than steel mills.

Hitemp Wires Inc., Westbury, N. Y., has increased its production capacity 25 per cent with the opening of an integrated manufacturing facility in Monrovia, Calif. The new plant is operated by Hitemp Inc., a newly formed subsidiary, producer of high temperature insulated wires, cables, and cable assemblies.

Kaiser Refractories & Chemicals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif., is operating its new periclase plant at Midland, Mich. The $3 million plant has an annual capacity to produce 45,000 tons of periclase and refractory grade magnesias. It utilizes magnesium hydroxide in slurry form furnished by Dow Chemical Co.'s Midland plant. The periclase will be shipped to Kaiser Refractories' Columbiana, Ohio, plant which has been expanded to include additional pressing and raw material handling facilities.

Stauffer Chemical Co., New York, is building a $1.6 million research center at Richmond, Calif.

NEW ADDRESSES

American Emery Wheel Works, Providence, R. I., moved its Detroit district offices and warehouse to Warren, Mich. Earl Haden supervises the district operations. The company makes grinding wheels and abrasives.

Punch Products Corp. moved its offices and plant to 370 Babcock St., Buffalo 6, N. Y. The firm designs and manufactures unitized hole punching and notching equipment.

Black & Decker Mfg. Co., Towson, Md., has moved its Florida factory service branch to 2075 N. W. 54th St., Miami, Fla. E. M. Schoditsch is manager.

Commercial Apparatus & Systems Div., Raytheon Co., is moving to 1415 Boston-Providence Turnpike (Route 1), Norwood, Mass. The 109,000 sq ft structure will house the division's headquarters, engineering laboratories, and a manufacturing plant.

Pennsylvania Flexible Metallic Tubing Co. moved its plant and office to Lincoln Highway (Route 30), west of Paoli, Pa. The firm manufactures ferrous and nonferrous corrugated and interlocked flexible metallic tubing, expansion joints, automatic barrel fillers. and rivet passers.

CONSOLIDATIONS

Jack & Heintz Inc., Cleveland, purchased **Roto - Lock Couplings Inc.**, South Gate, Calif., producer of hose couplings for aircraft, missile systems, and general industrial and commercial applications. Roto-Lock's inventory and tooling will be moved to Cleveland where the couplings will be produced. The purchase does not include any real estate.

Truck Equipment Co. has purchased a major interest in **Ajax Iron Works**, both of Denver. Ajax specializes in steel fabrication. Additional equipment to be purchased will include a chrome plating tank. Truck Equipment makes truck-mounted derricks, aerial ladders and lifts, tensioning, and cable reel trailers.

Philip Morris Inc., New York, cigaret manufacturer, is acquiring **A. S. R. Products Corp.**, that city, a diversified company in the razor, blade, and precision metal manufacturing field.

Shuler Equipment Co., Birmingham, has acquired the **Magic City Iron & Steel Co.** of that city and will operate it as a division. The new division will fabricate long span joists, structural steel, and ornamental iron.

Waltham Precision Instrument Co., Waltham, Mass., bought **Electro-Mec Laboratory Inc.**, Long Island City, N. Y. The firm custom designs and manufactures a variety of high precision potentiometers.

Garlock Packing Co., Palmyra, N. Y., voted to acquire **Chetron Corp.**, Los Angeles, and change its name to **Garlock Inc.** The transaction is waiting approval by the California commissioner of corporations.

How hard is hard? Tests by a locking pin manufacturer showed that hardness varied from 34 to 61 on Rc Hardness Scale. This spotty result caused a high rate of rejects, and a substantial loss of profits.

Sinclair engineers, using the Sinclair Quenchol Demonstrator, found the culprit: the quenching oil formerly used lacked cooling power, only 784 rating against 1225 minimum for Sinclair QUENCHOL 521. Now, with Sinclair QUENCHOL 521, hardness is uniformly high–59 to 65 Rc. Working loads are now 67% higher–3 tons to 5 tons per quench. Test your present oil. Call your local representative or write

Sinclair

SINCLAIR REFINING COMPANY

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STEEL

Technical Outlook

CONSTRUCTION STANDARDS EASED— Greater latitude in applying high strength bolts to steel structures is permitted under new agreements reached by the Joint Industrial Council, American Institute of Steel Construction, New York. Among the new provisions: 15 bolts can be used in place of 22 rivets; new nut sizes permit the same size tool to be used on bolt head and nut; either torque or clamping force methods may be used for tightening measurements.

PRIVATE EYE FOR INDUSTRY—An optical device made for rockets, tanks, boilers, and pipes can inspect points 30 ft from the observer through 2 in. openings. It's equipped with a light, mirror, and optics, and can be fitted with a camera, says rocketmaker Aerojet-General Corp., Azusa, Calif., a subsidiary of General Tire & Rubber Co.

VERSATILE TRANSISTORS— A new series of diffused junction, silicon transistors will operate at minus 117° F or 315° F, says Radio Corp. of America, New York. Applications include power inverters (direct to alternating current), choppers, solenoid and relay controls, and oscillators.

AMPLIFIES LIGHT— A small tube called the Astracon can detect the light from one electron, say officials at Westinghouse Electric Corp., Pittsburgh. Brightness is multiplied thousands of times by the device.

ATOMIC LAUNDRYMAN—Tapco Group, Thompson Ramo Wooldridge Inc., Cleveland, operates a commercial decontaminator, probably one of the first in that field. Principal items handled: Pumps, valves, and similar reactor parts.

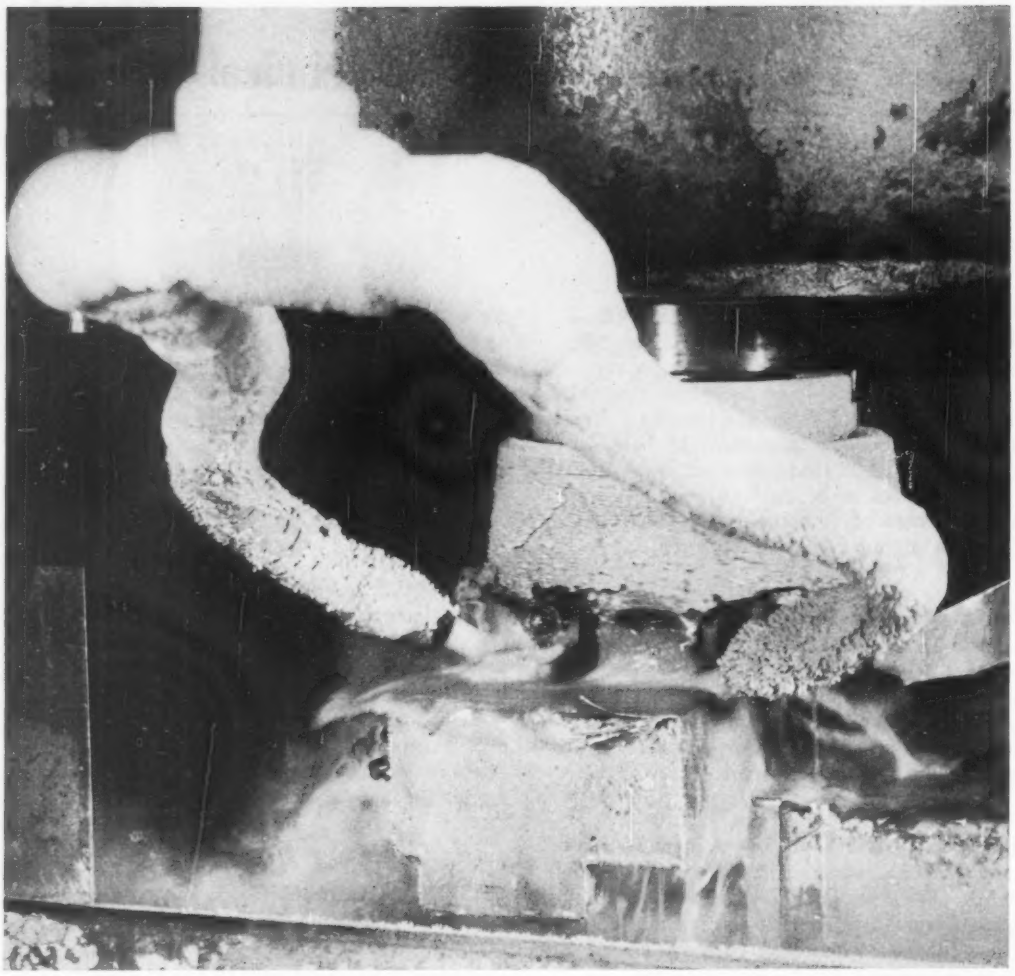
ADVANCE IN CASTING— A breakthrough in precision casting permits the use of polystyrene patterns in ceramic shell molding. Previously, the process was limited to flask type molds because of problems in removing the plastic without mold damage. Patterns that cost less than wax and lend themselves to quantity production can now be used. The shell type mold cuts the time needed for mold preparation and burnout and reduces the weight of the mold. Coating the first dip with sand has been simplified by the use of a fluidized bed; a simple dip in the sand tank is enough to get uniform coating. The cost of short runs has been cut by a multiple section molding technique which gives added flexibility to the plastic patterns.

LONG WAY TO GO— Less than 1 per cent of potential users are benefiting from the atoms for peace program, although advantages of "tagged" atoms have been emphasized repeatedly to industry. "Peaceful development of the atom is greatly held back by unfounded fears," suggests Gordon R. Molesworth. He's former chief of public relations for the Atomic Energy Commission and founder of the American Museum of Atomic Energy.

CASTINGS PROBLEMS—Says a responsible government official: "We'd like to use more castings, but we must overcome some pressing problems, not the least of which is reputation." More must be done in the field, he insists, adding: "Casting problems haven't been tackled properly." One thing that is being done: At least one major classified project is devoted to developing better high strength castings for aircraft.

ALUMINUM POWERPLANTS— Fifteen makes of European cars now have aluminum engines, claims J. H. Dunn, research development manager, Aluminum Co. of America, Pittsburgh. Latest entry, Rolls Royce, gets 25 per cent more displacement with its new V-8 than with the old 6 cylinder, which weighed 7 lb more.

SPEEDY HONEYCOMB TESTER— West Coast aircraft firms are readying stocks of honeycomb panels for a production scale thermographic inspection unit about to be delivered to the Los Angeles plant, Magnaflux Corp. Production rate: 1600 sq ft an hour. Materials and labor costs are cut 80 per cent by the device, claims Magnaflux.



Temperature at the two ½ in. nozzles averages −76° F as the subzero flood coolant surrounds this face milling cutter. Convair engineers report that within 15 minutes all the contact surfaces became iced

Chill Puts New Life in Tools

Coolants at subzero temperatures keep tool-weakening heat away from the cutting edge. Here's a report on the technique from Convair and the Air Materiel Command

HEAT is the enemy of reasonable tool life when you're machining high strength, high heat resistant metal alloys.

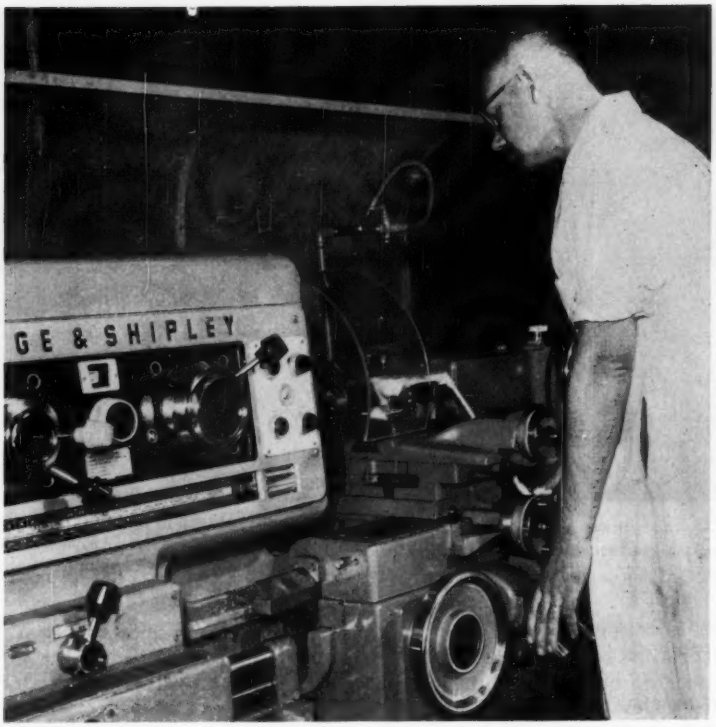
When the chip reaches the temperature of plastic deformation, the cutting tool is subjected to heat approachng the maximum permitted by the tool material.

In a frontal attack on the problem of temperature at the tool chip interface, some aircraft engineers have been experimenting with subzero machining—chilling the cutting zone by applying cooled cutting fluids.

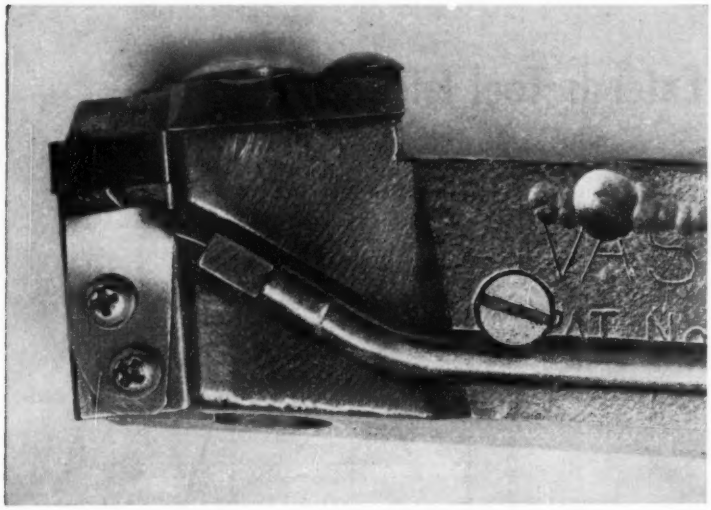
• Application of subzero coolants to the machining of these alloys proved to have advantages and some disadvantages.

The five materials tested: A-286, L-605, R-235, H-11, and Mo-0.5 Ti. Each alloy was turned, milled, drilled, tapped, sawed, and ground at room temperatures and under subzero conditions. Turning was done both in the as-received and heat treated conditions.

These were the tests in which improvement (sometimes substantial) was found:



Machines used in the tests, like this lathe, were standard models. Photo (below) shows turning tool rigged for CO_2 mist application. The end of the mist tube (0.022 in. diameter) was 5/16 in. from the cutting edge. Temperature of delivered CO_2 was −101.2° F



TEST RESULTS

Material	Operation	Coolant	% Improvement Tool Life Vs. Room Temperature Machining
A-286	Turn	Flood	250
L-605	Turn	Flood	300
L-605	Drill	Flood	200
R-235	End Mill	CO_2	100
R-235	Drill	Flood	100
H-11	Turn	CO_2	230
Mo-0.5%Ti	Turn	CO_2	100
Mo-0.5%Ti	Drill	Flood	400

Other conclusions:

• Milling with tungsten carbide tools and flood coolant was the toughest job. Reasons: Thermal shock (hot in the cut—chilled out of it) and severe buildup on the cutting edges.

• With these alloys, the margin of safe operating speeds is only about 10 per cent that allowable in machining conventional steels.

• Machine tools you use on these alloys must be in the best possible condition. Tight spindle bearings, tight gibs, smooth ways, and a cross slide free from backlash are mandatory.

• In high speed steel tools, the abrasion and heat resistant grades (like T-15) were superior to the more common molybdenum steels.

• Wear lands of more than 0.010 to 0.015 in. cause rapid work hardening of the machined surface. Implication: Cutters should be changed before wear reaches the point you normally consider reasonable.

• To get optimum cutting conditions, you'll need an infinite selection of machine speeds.

• Subzero machining has no noticeable effect on the workpiece microstructure or mechanical properties.

Those conclusions are from the report of the engineers at Convair Div., San Diego, Calif., General Dynamics Corp. The report has been submitted to the sponsor of the research project, the Manufacturing Methods Div., Air Materiel Command Aeronautical Systems Center, U. S. Air Force, Wright-Patterson Air Force Base, Ohio. R. T. Krueck of the AMC group monitors the program.

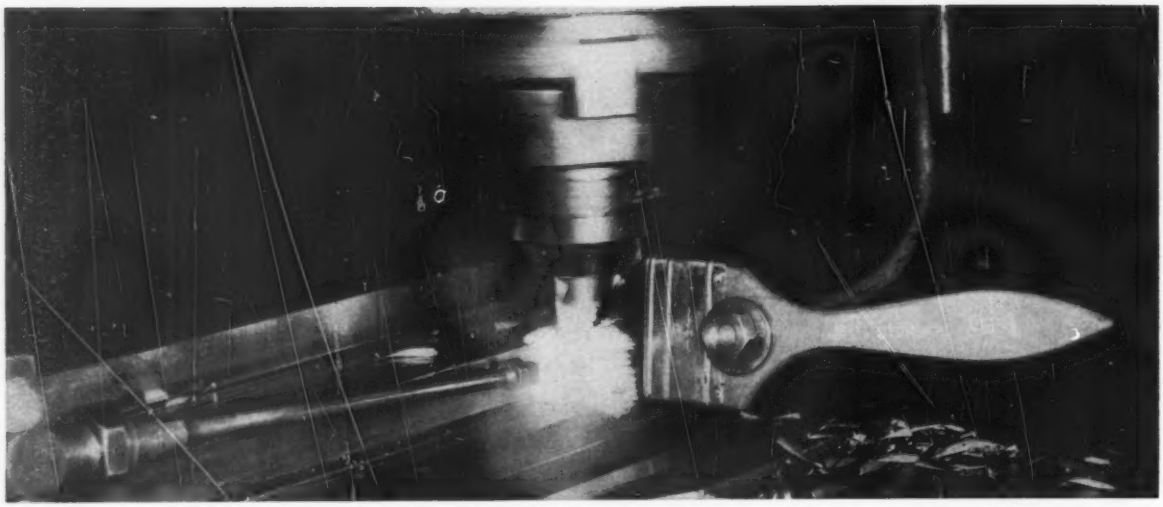
• A variety of coolants was tried.

Three basic subzero approaches were evaluated: Subzero (CO_2) mist cooling, subzero flood cooling, and refrigerating the workpiece to subzero temperatures.

The CO_2 was contained in a standard bottle with siphon tube. A hose coupling, a Skinner electric solenoid valve (operated by a foot switch), and a spray nozzle completed the setup.

For subzero flooding, a coolant (55 gallons of No. 156 ABCO Solvolene) was poured into an insulated 140 gallon tank. Temperature of the tank was lowered to −76° F by using 400 lb of dry ice each 8 hour shift. Temperature at the nozzle averaged −58° F.

In the cold chest technique, parts were submerged for 18 hours at −110° F, brought back to room temperature, then machined. No attempts were made to machine the bars at subzero temperatures due to



Swivel spray nozzle with one orifice shoots CO_2 mist at the end milling cutter. Temperature was measured at −81.4° F. The brush is used to clear chips out of the way

the fast rate of temperature rise after removal of the bars from the cold chest.

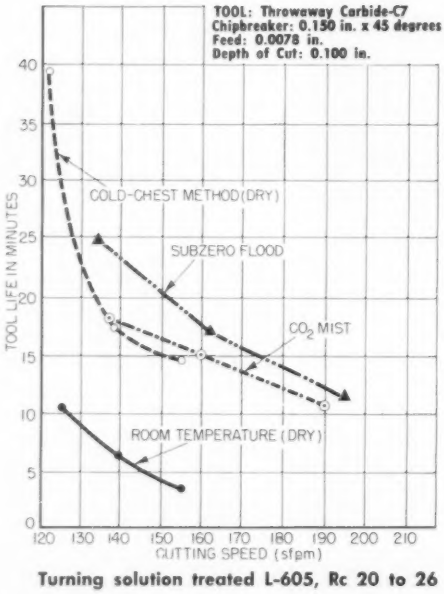
- **Machines were standard.**

During preliminary test runs, Convair engineers say it became evident that what is considered a generally acceptable condition is not at all satisfactory for machining high strength, high temperature alloys. They found it necessary to rework the machines to optimum conditions.

A Lodge & Shipley, 20 in. engine lathe with a four-jaw chuck was used for the turning tests. Face and end milling tests were run on a No. 5 Cincinnati vertical, 50 hp, dial type milling machine. A No. 5 Cincinnati horizontal machine was used for side milling. Drilling was done on a No. 50, Knight milling machine. A standard, D-8, DoAll

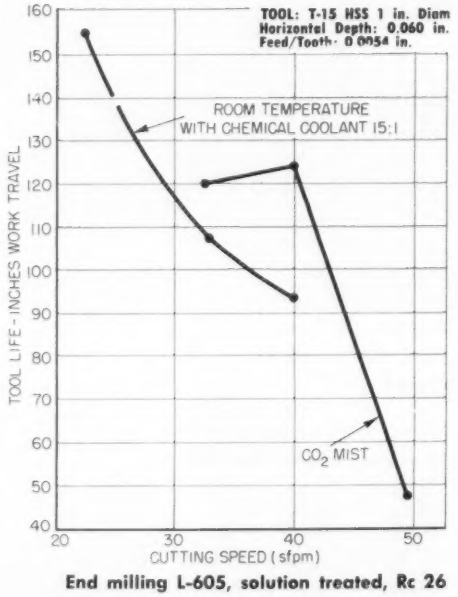
Here's How Technique Extends Tool Life

TURNING



Turning solution treated L-605, Rc 20 to 26

MILLING



End milling L-605, solution treated, Rc 26

surface grinder with a spindle speed of 1630 rpm did the grinding, and a multiple spindle, Leland-Gifford drilling unit was used for tapping.

A-286

The major problem in machining this material (produced by Allegheny Ludlum Steel Corp.) in the fully aged condition was the tendency of the material to work harden. Subzero temperatures did not lessen this effect. High feed rates help to alleviate the work hardening effect. Constant feeds and avoidance of cutter dwell are recommended.

Although subzero machining improved tool life on turning, it did not enhance any of the other operations on this material.

L-605

Produced by Haynes Stellite Co., Kokomo, Ind., a division of Union Carbide Corp., this is a high temperature, oxidation, and carburization resistant alloy. In the solution treated condition, it has relatively poor machinability. In both drilling and turning tests, subzero machining produced longer tool lives.

R-235

Also produced by Haynes Stellite, this is a high temperature resistant metal that Convair engineers had difficulty machining—especially in the aged condition. They also report: "This material showed the least response to subzero coolants when machining . . . with carbide cutting tools.

"With a T-15 high speed steel, two flute end mill, however, subzero machining paid off."

H-11

This hot work die steel maintains high strength and toughness at elevated temperatures. (Vanadium-Alloys Steel Co.'s VascoJet 1000 was used for the test.) Machinability is best in the annealed condition of 180 to 210 Brinell. CO_2 mist application gave the best tool life boost on turning, since it removed the heat from the chip before it passed over the tool face.

Mo-0.5%Ti

This alloy is produced by Climax Molybdenum Co. with the arc-cast process. A high temperature alloy, it has an abrasive property in machining that tends to restrict machinability. Although CO_2 coolant improved tool life on both high speed and cast-alloy cutting tools, the most marked improvement came with carbide. Further, Convair says subzero machining is more effective at high than at low speeds since " a chip which is too cold will not shear properly."

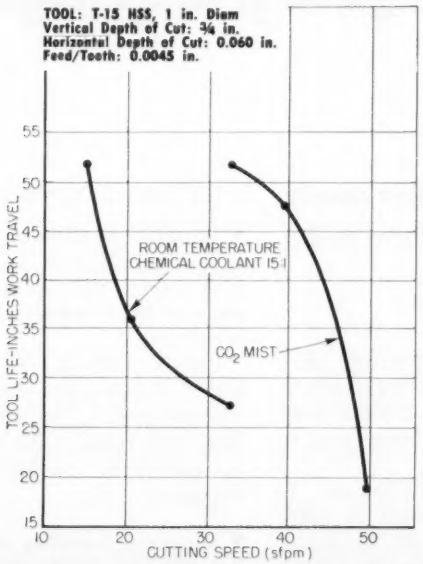
Machining with a subzero flood coolant added to drill life on this alloy.

Convair's report to the Air Materiel Command suggests that subzero machining can alleviate some problems in machining supermetals. It also indicates that applications need to be selected carefully. In addition, more research needs to be done to arrive at data that can become a production man's guide.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

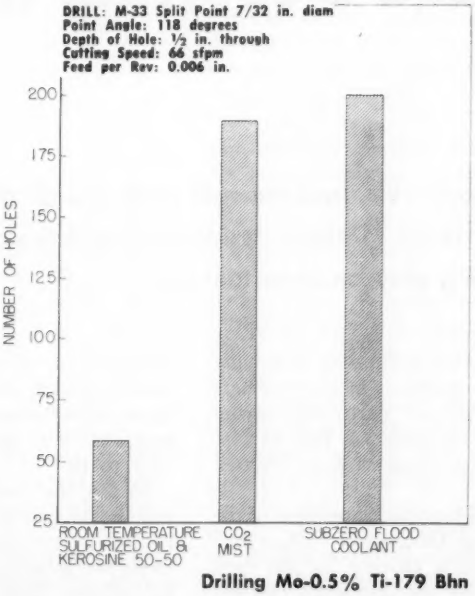
These charts illustrate gains made possible by subzero machining in selected operations. Not all operations are improved

MILLING

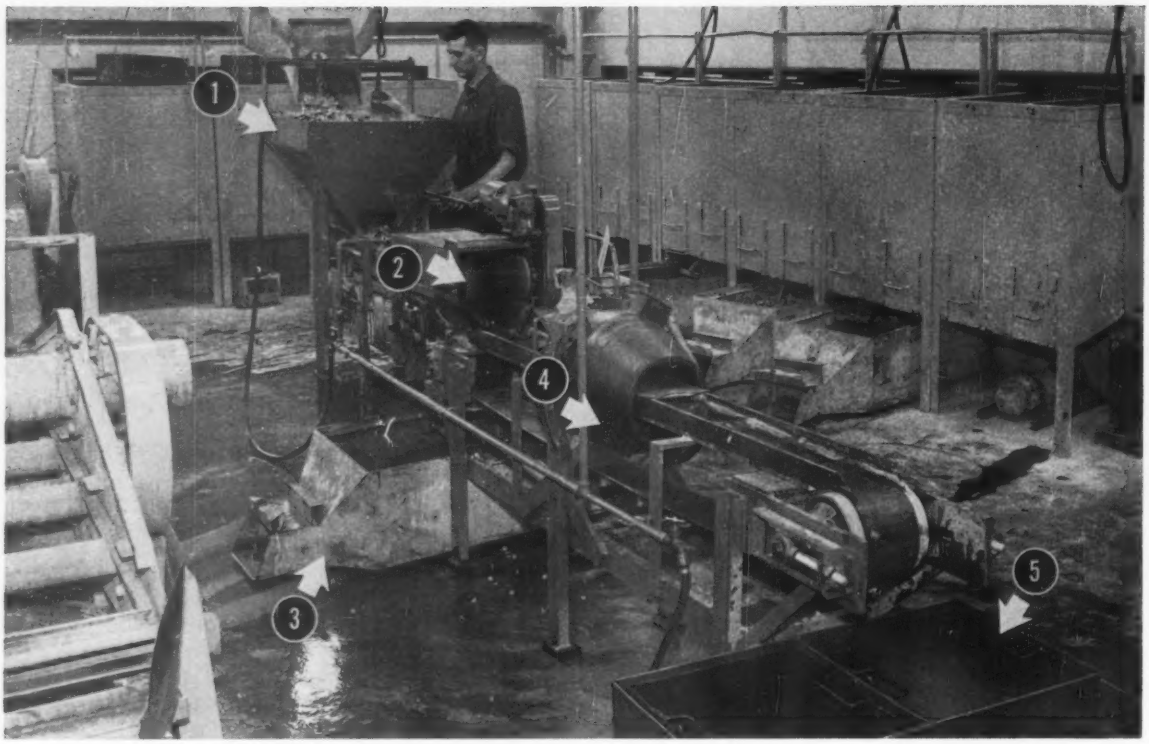


End milling R-235 solution treated & aged Rc 33

DRILLING



Drilling Mo-0.5% Ti-179 Bhn



National-built separator accepts abrasive-parts mix in hopper (1) at far end, feeding it to belt which passes under permanent magnet-belt (2) which lifts steel parts out of abrasive which falls into hopper (3) below. Parts pass on through a demagnetizer (4) dropping into submerged baskets (5)

Shake Deburring Rings Up Savings for

Small, long, thin, and intricate parts are all handled cleanly and efficiently. Devices designed to separate abrasive media from parts play an important role

VIBRATION equipment is solving deburring problems in an extremely wide variety of parts and saving thousands of dollars a year at National Cash Register Co., Dayton, Ohio.

W. G. Flanagan, supervisor of the Machining Div., says: "On one part alone, a bearing for our cash registers, we are saving $22,600 per year in deburring costs. Another piece costs us about 40 cents a hundred to deburr, and we are handling up to 100,000 pieces in 2 hours. Also, part quality is much better than it used to be."

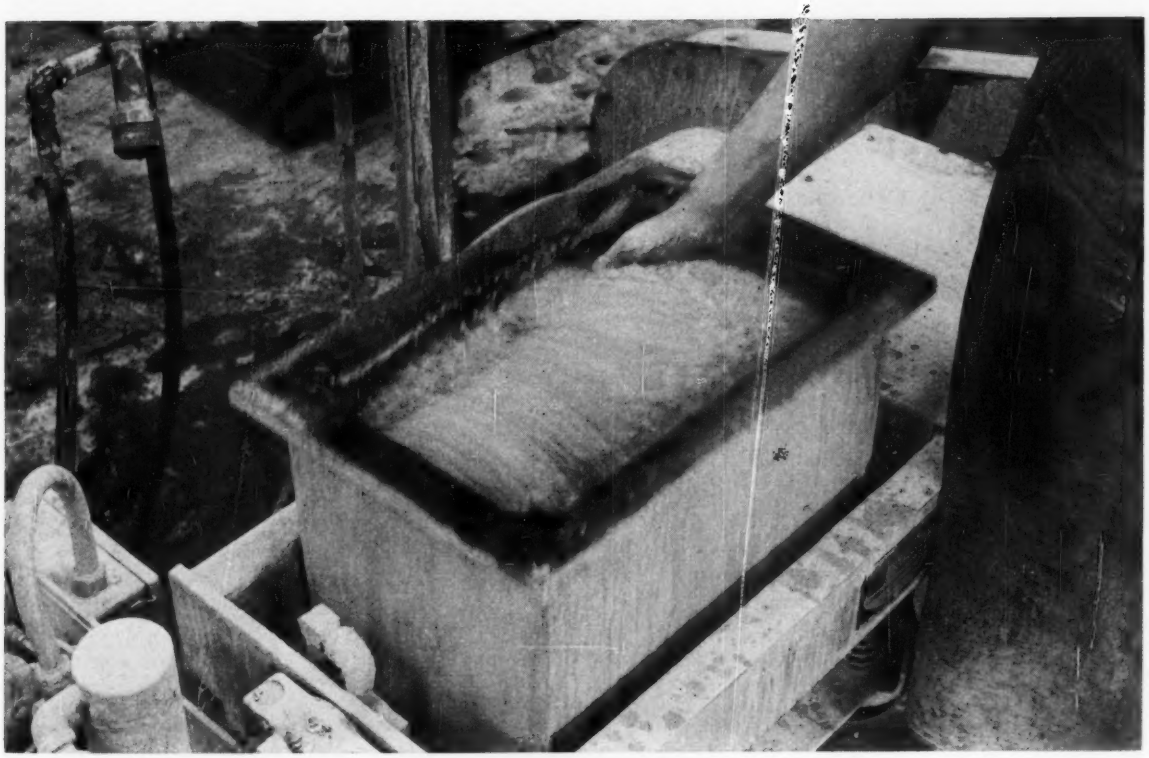
So far, the company has put vibratory deburring to work on nearly 600 parts—there are thousands to go yet, including some for a new, $1 million "304" data processing unit. Continued expansion of the department is planned by the firm.

• Vibration wears burrs away gently and quickly with a mild, scrubbing action. (It's so safe you can put your hand in while the machine is running.)

Parts and media are mixed as in barrel tumbling, but they are loaded into open, U bottomed hoppers lined with rubber. An electric motor driving an eccentric does the shaking.

• Successful handling and operating rules play an important role.

Here are some of those followed by National:



Small unit for small parts illustrates vibratory principle. Abrasive-parts-water slurry moves continually, gently wearing away burrs. Operator demonstrates safety feature

Cash Register Maker

Rule 1: Use the vibration units for deburring only. Wash parts and separate from media in other machines. Don't tie up the vibrators.

Rule 2: Plan to reclaim and reuse all abrasive media. As the media wears too small for one job, put it through a series of screens to resort and reclassify according to particle size. (Abrasive costs can get way out of line if you fail to observe this rule, advises Mr. Flanagan.)

Rule 3: Lean heavily on the advice and experience of a competent equipment supplier. Help obtained from National's supplier (Lord Chemical Co., York, Pa.) has been invaluable in whipping tough problems fast and getting the right media for a particular job.

Rule 4: Keep a superclean shop for superior results. Absence of dirt simplifies the operation. (National's installation has ceramic tiled walls, concrete floor.)

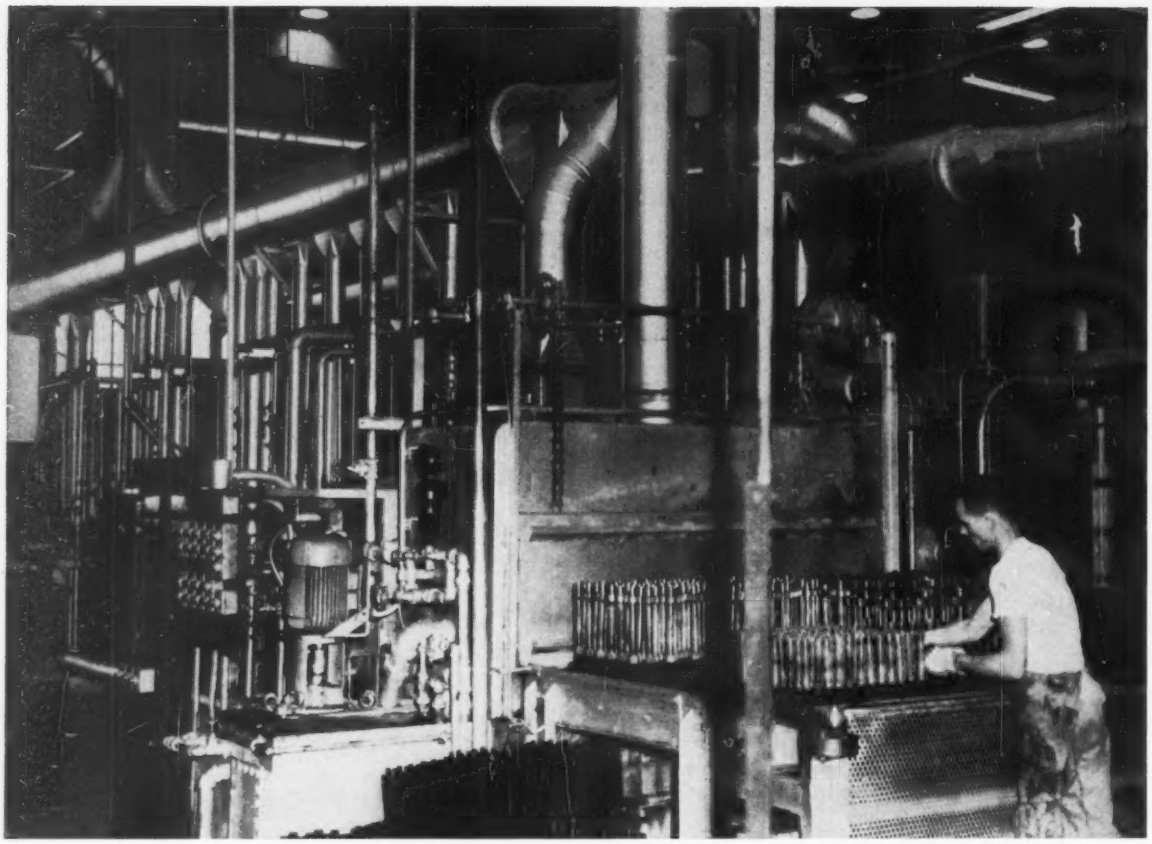
• A special card file and several auxiliary machines National designed aid in holding operating costs to a minimum.

Each part being deburred has a matching file card which lists vibration speed, size of media, weight of charge, cleaning instructions, deburring time. Even the amount of water in the mix is recorded. Such data make it possible to use unskilled workmen entirely.

"Separating media from parts efficiently is vital to successful deburring," Mr. Flanagan says.

National has a special machine it devised for that purpose. A large hopper at one end receives a charge of deburred material. A variable rate, vibratory feeder (Syntron) slips parts and abrasive onto a moving belt which passes under a permanent magnet. The magnetic device lifts steel parts out of the media and deposits them on a separate belt which carries them through a demagnetizer. A water bath at the belt end cushions the parts as they fall into submerged handling baskets.

The separated media falls into a box at the end of the first belt. A chip grader used in the setup resembles an old-fashioned ore cradle used by gold miners. Screens of various sizes are inserted in the cradle and power is turned on to rock it. The device is a main feature of a program to get maximum benefit from abrasive media.



The continuous carburizing furnaces are manually loaded at the entrance. Parts are set on fixtures for transport through furnace

Ford Heat Treat Setup Combines Versatility, Output

Special purpose production lines are teamed with flexible batch type furnaces, permitting the handling of a wide variety of parts and heat treatments at Ford plant

PRODUCTION can be combined with versatility if both are considered in the planning stages.

Ford Motor Co.'s Transmission & Chassis Div., Indianapolis, has combined a group of gas fired furnaces into a flexible heat treating shop capable of handling a wide range of parts and treatments.

• **Carburizing** — Heaviest production is in carburizing, to give both wear resistance and strength to operating parts in manual and power steering units for Ford and Lincoln autos.

Four Holcroft lines handle carburizing at 1700° F, quench and 375° temper in an RX prepared atmosphere. Parts are manually loaded at the entrance of the furnace lines in alloy fixtures; balance of the heat treating cycle is automatic. Gas fired radiant tubes provide the heat in both carburizing and tempering portions of the furnaces.

Another Holcroft furnace is used for separate carburizing jobs. Parts require a 0.035 in. case after grinding, so specifications on the heat treatment call for 0.055 to 0.065 in. (Minimum permitted at any point is 0.045 in.)

Salt baths are also used for some of the carburizing work, where lower temperatures and lighter cases are desired. The Surface Combustion units are gas fired and have zero governor controls. Heat input to each furnace is about 1 million Btu; carburizing temperature is 1550° F; the burners fire tangentially around the pots to prevent local hot spots, which would shorten pot life and accelerate salt breakdown.

• **Multipurpose Furnaces** — Treatments other than carburizing are needed, but the requirements are lighter. So batch furnaces are used; two Dow radiant tube, gas fired, prepared atmosphere units are equipped for a variety of jobs.

VULCANITE CENTERLESS WORK AND REGULATING WHEELS

PRECISION MATES!

Centerless grinding is the highest in the art of metal finishing. Unless the work wheel and the regulating wheel have been made for each other, a *needless* handicap occurs. U.S. Rubber centerless wheels are precision-mated. The production of perfect mates for centerless grinding is a U.S. Rubber specialty.

"U.S." Vulcanite was the first rubber-bonded wheel made for industrial America. 100 years of production and research back up our present *precision mates.* The hundreds of plants that use "U.S." Vulcanite *precision-mated* wheels prove the point that to do otherwise imposes a needless handicap.

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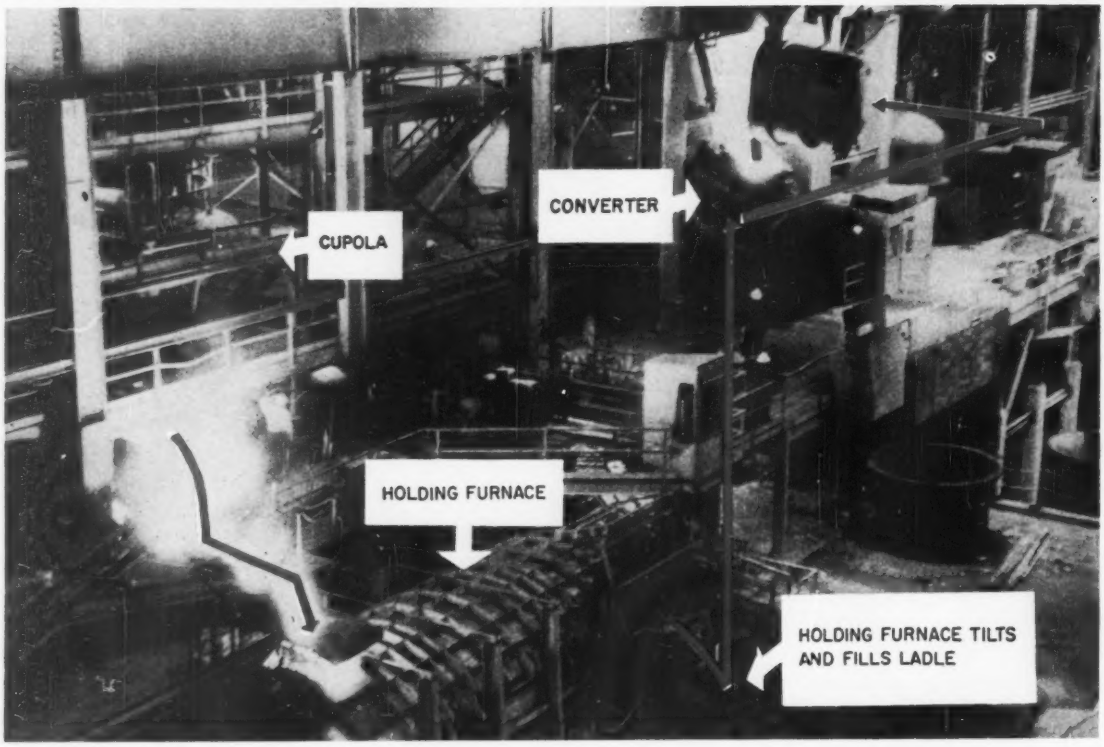
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.



Molten iron flows continuously from hot blast cupolas into a gas heated holding furnace. A ladle crane carries the hot metal to the oxygen converters

Cupola-Converter Process Produces Ingots at Acme

Company decides to make its own steel after weighing the cost of melting facilities against the premium prices paid for purchased billets and slabs

MANY STEELMAKERS are intrigued with the melting methods adopted by a newcomer in the steel producing field.

Hot blast cupolas (long used to melt foundry iron) and basic oxygen converters (ordinarily operated with blast furnace hot metal) are combined in a new, $35 million melt shop.

It's at the Riverdale plant, Acme Steel Co., Chicago. The installation includes two cupolas and two converters.

• Previously, the company purchased slabs and billets. But uncertain supply and unfavorable prices prompted installation of melting facilities.

Major suppliers of slabs and billets were expanding their facilities and would eventually need the semi-finished steel they produced for their rolling mills.

The new melting and rolling facilities are expected to produce steel at $5 to $10 less per ton than the best purchase price.

• The cupola-converter process got the nod after a careful study of several steelmaking methods.

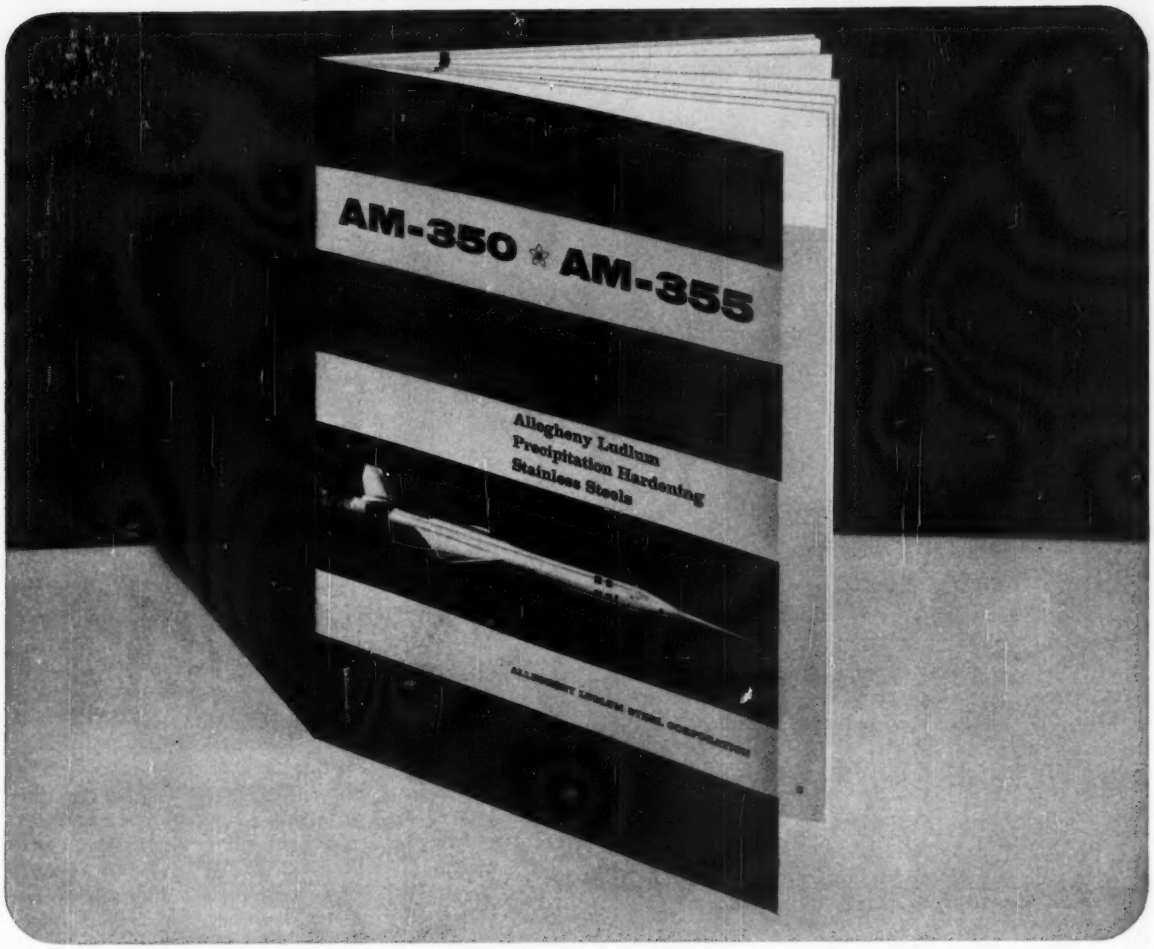
Cupolas were chosen as the source of hot metal because of their dependability, low capital cost, and operating economy. The company decided to make steel in oxygen converters because of their ability to make several grades. Other advantages: Low capital investment, low steel production cost, and good product quality.

Cupola iron is usually up to 200° F hotter than blast furnace hot metal; it contains slightly less carbon, silicon, and phosphorus. Converters using cupola iron are expected to make faster heats, generate less slag, and produce steel with less phosphorus than vessels charged with conventional molten iron.

• Output of the cupolas is controlled by changing the pressure and volume of hot blast air and by varying the amount of metallics in the charge.

Each cupola produces 15 to 50 tons of hot metal per hour, using

Experience**—the added alloy in **Allegheny Stainless



New booklet on A-L's precipitation-hardening stainless steels, AM-350 and AM-355

A tool for anyone interested in high strength-to-weight metals

In this technical booklet, you get the facts on Allegheny Ludlum's precipitation hardening stainless steels, AM-350 and AM-355, metals developed for space age requirements.

AM-350 and AM-355 combine these unusual qualities. They are easy to fabricate. Have high strength-to-weight ratios at room and elevated temperatures combined with excellent resistance to corrosion.

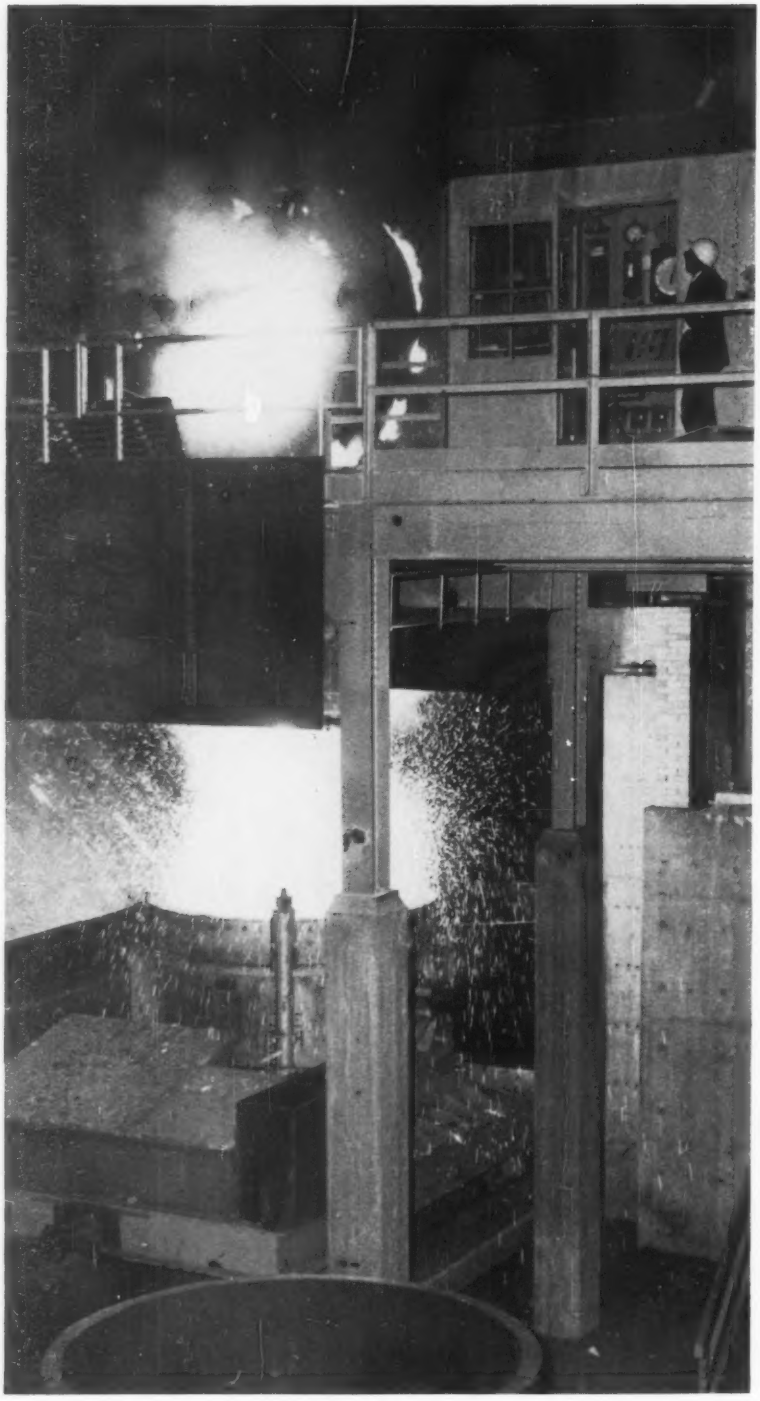
The physical and mechanical properties of the two metals are described in 33 charts and tables. Included are heat-treatment and fabrication data, eight photomicrographs and a section on corrosion resistance with representative values in selected environments.

It's jam-packed with data. For your free copy, see your A-L representative or write *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. Address Dept. S-5-1.*

055

ALLEGHENY LUDLUM

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT



Converter tilts to deliver a heat of steel into the teeming ladle; when the ladle is filled, it is taken to the pouring platform, where ingots are cast

a charge of assorted scrap, cold pig, and cast iron. Charge analysis: About 78.5 per cent metallics, 15.6 per cent coke, 4.7 per cent limestone, and 1.2 per cent fluorspar. Blast air, preheated by the burning of gases passing through the dust collection system, enters the tuyeres at about 1000° F.

The cupolas, produced by Whiting Corp., Harvey, Ill., are mounted on bases 13 ft above ground. The shells, 10 ft in diameter, are water cooled by an external spray. They are unlined, except for a carbon block bottom that extends upward slightly beyond the tuyeres.

An elevator between the two cupolas lifts charge buckets and positions them in the cupola tops, 80 ft above the ground, for unloading. A holding furnace accumulates hot metal from the two cupolas and tilts to pour it into the hot metal ladles.

• Each converter is expected to make about 89 tons of steel for every 100 tons of scrap and molten iron in the charge.

The converters, produced by Pennsylvania Engineering Corp., New Castle, Pa., are 14 ft in diameter and 25 ft high. They produce steel in heats of 25 to 60 tons.

Each converter requires about 40 minutes to make a heat of steel. Blowing time: About 20 minutes. Time required varies with the size of the heat and the grade of steel being made.

Converters are charged with 80 to 85 per cent hot metal and 15 to 20 per cent selected scrap. Other elements are added before or during the blow. Addition of alloying elements to the converter or ladle is vital at Acme, where several grades are required for strip products. The company doesn't plan to produce stainless or special alloy steels at present but might make such grades in the future.

Pure oxygen for the converters (about 2000 cu ft per ton of steel) comes from a generating plant built across the Little Calumet River by Air Products Inc., Allentown, Pa.

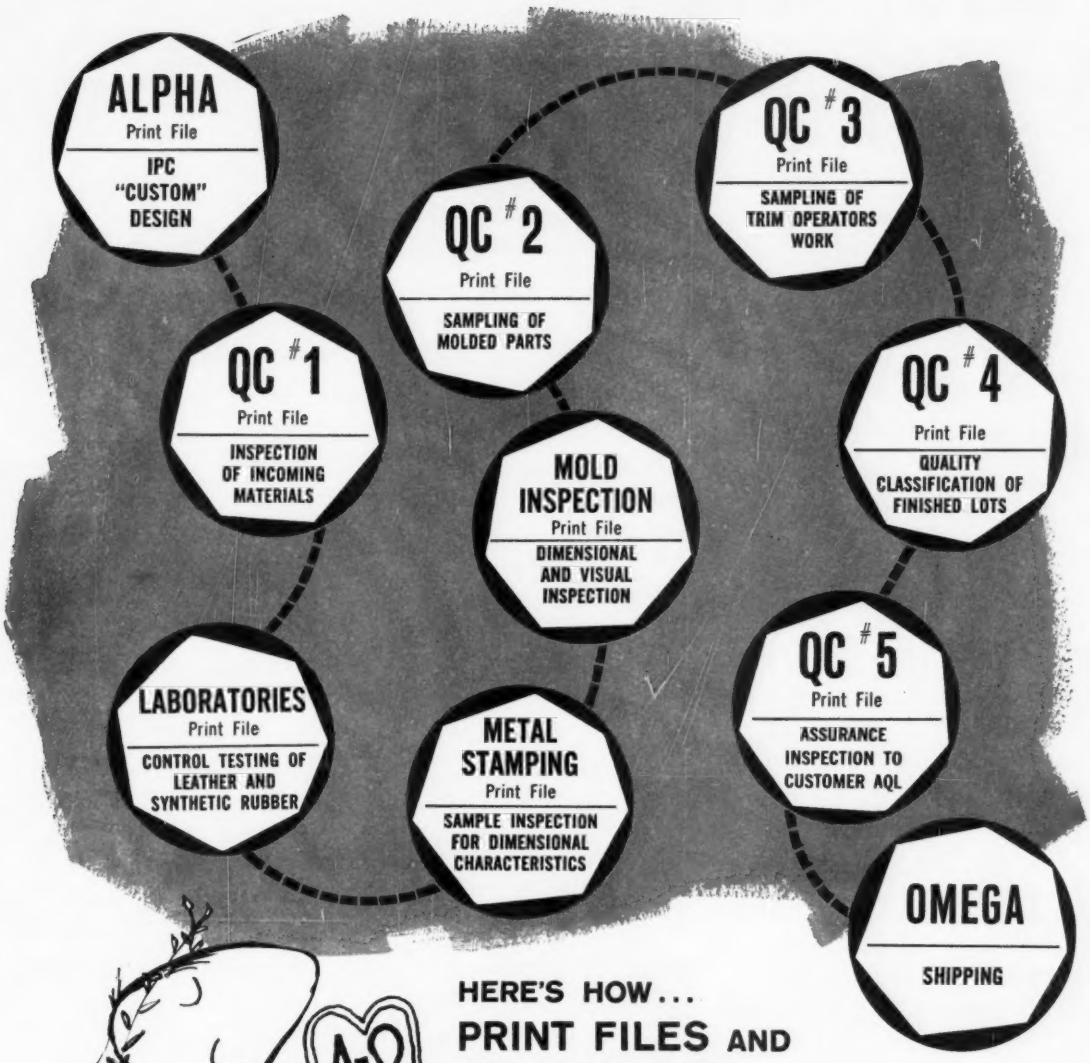
• Steel is poured in two sizes of ingot molds, then rolled into a variety of slabs and billets.

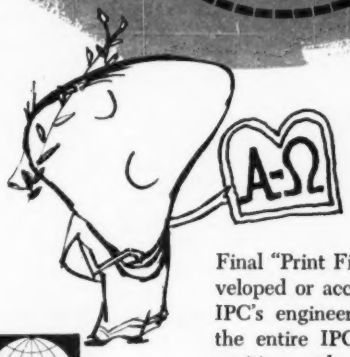
Pour height in the molds is varied to make ingots that are multiples of the required slab weight. Ingots used for most products are about 25 by 27 in., or 21 by 23 in. Heights are 62 to 78 in.

After pouring, solidifying, and stripping, ingots are taken to the soaking pits, where they are reheated to rolling temperature.

Slabs wider than 8¾ in. are finished on the blooming mill, cut to length at the shear, and taken to the slab yard for cooling. Blooms required for narrower slabs and billets are also rolled on the blooming mill, but they are fed into the billet mill without reheating.

From beginning to end... *and in between...* **IPC** controls quality in manufacturing OIL SEALS... PACKINGS... PRECISION MOLDING





HERE'S HOW... PRINT FILES AND QC STATIONS

Final "Print Files" for every product developed or accepted for manufacture by IPC's engineers are located throughout the entire IPC plant. These provide a positive, at-hand reference for product quality!

More than this . . . IPC maintains Q C (Quality Control) stations at strategic locations in the manufacturing line *through which every batch of manufactured parts MUST pass* before they are committed to shipment.

IPC's reputation for quality is no mere coincidence. It's the planned cornerstone of customer relations. We may err, as humans will, but we've reduced the incidence of error to an absolute minimum. Try us . . . or better yet arrange to visit our plant. We'll be happy to show you how IPC Quality Control benefits America's most critical manufacturers.

IPC

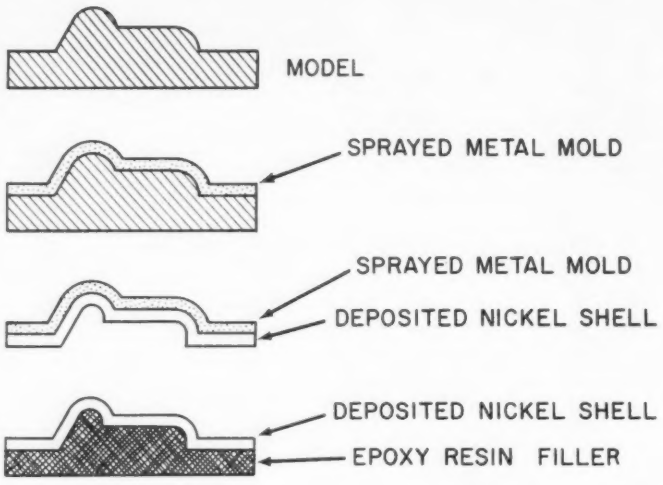
OIL SEALS
PACKINGS
PRECISION MOLDING
Custom designed for your application.

INTERNATIONAL PACKINGS CORPORATION

Bristol, New Hampshire

Nickel Deposition Process Turns Out First-Rate Tools, Dies

These patterns and molds were reproduced by the new process



Here are the procedural steps used to insure the development of even the most intricate molds

Gas technique faithfully reproduces intricate contours, eliminates machining. Dies are said to be tough, resist abrasion, work harden under impact

A NEW WAY to make molds, dies, patterns, and similar shapes promises to reduce production costs for stampers, foundrymen, automakers, and many other metalworkers.

Based on gas deposition of pure nickel, the Carbonyl process faithfully reproduces many intricate shapes in a wide variety of sizes, says the developer, Budd Co., Philadelphia.

These are some of the advantages claimed:

- Dies or tool surfaces resist abrasion, are tough (Brinell 180 to 220), and work harden under impact.
- Deposits have excellent resistance to heat checking (up to 1600° F).
- Forming die surfaces become brighter, harder with usage, do not adhere to steel blanks, and require no lubrication. Parts are said to be free of scoring even under the most extreme drawing conditions.
- Contour reproduction on the average is within 0.005 in. of a master.

Budd Co. says it will market the end products rather than the process. Current work is centered on auto parts: Patterns, coreboxes, and molds (diecasting, permanent, and shell). Nickel molds for aluminum engine blocks are also feasible, the firm says.

• The process produces nickel shells or molds which are used to form or cast metals and other materials. First step: Get a model or master.

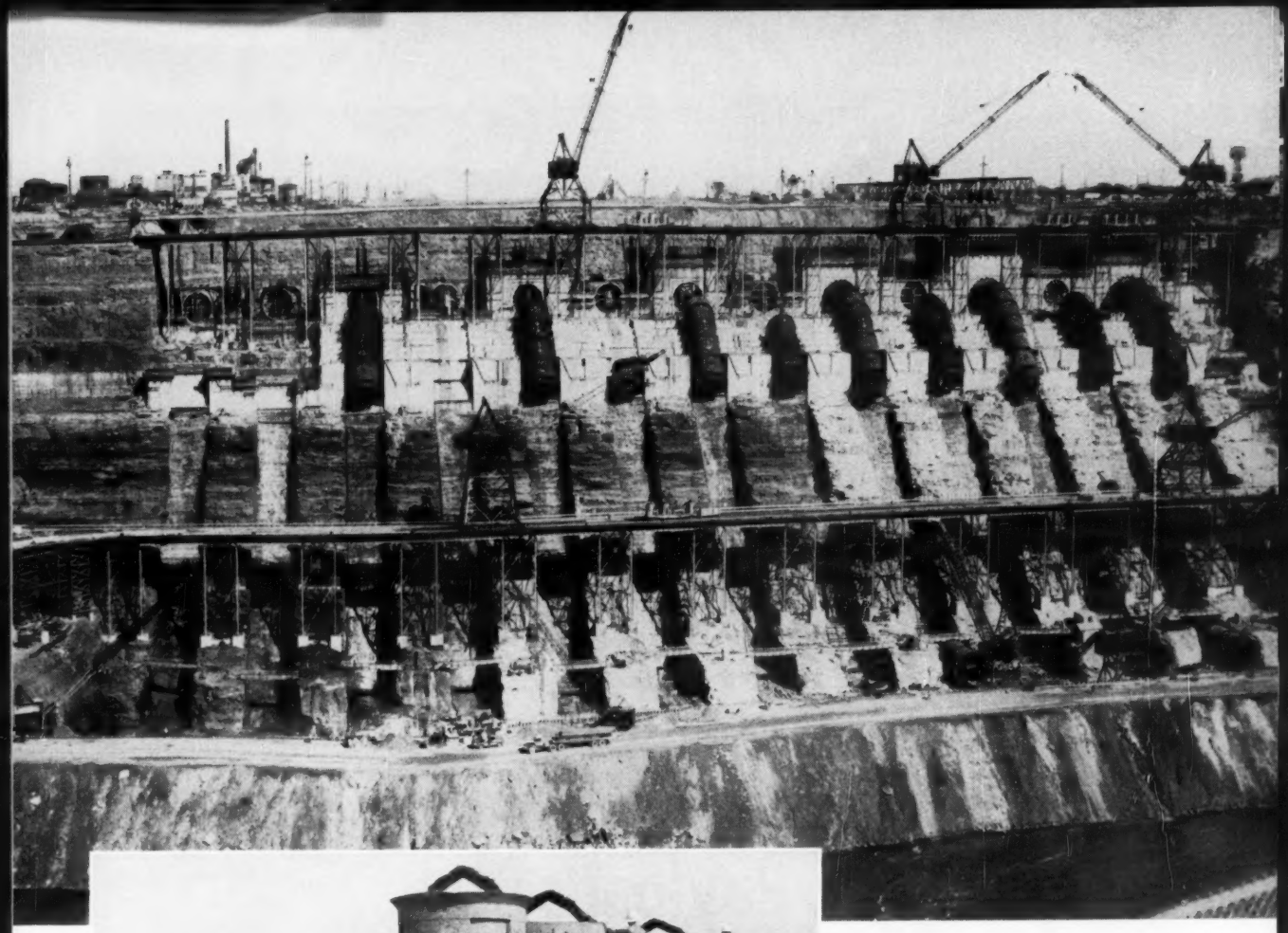
After inspection, the model is treated with a release agent, then sprayed with a eutectic metal until a negative mold is built up about ½ in. thick.

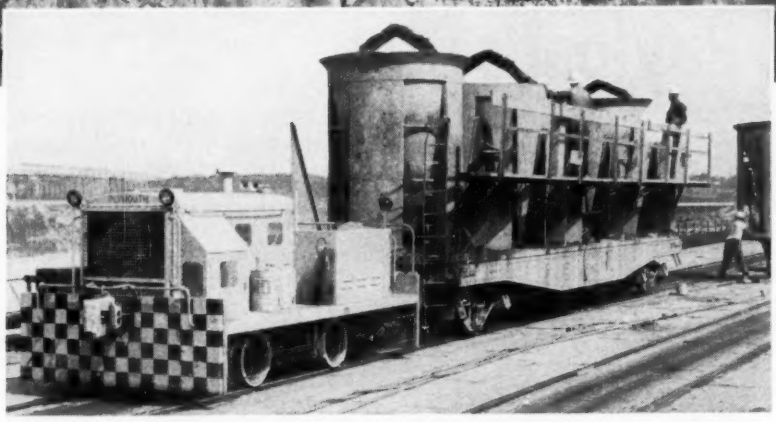
The negative is placed, face up, in a sealed chamber which is filled completely with carbon dioxide. Molds are heated to about 330° F. When nickel carbonyl gas ($Ni(CO)_4$) is introduced, it deposits pure nickel on the molds. Thickness of the deposit depends on time. It takes from a few hours to several days to deposit 0.050 to 0.400 in. of nickel.

The nickel shell is called a positive, which is frequently sent to a customer as a shell. It may be backed up with an epoxy resin filled with iron or aluminum powder.

The process can also be varied to produce a nickel negative of an original contour.

Development of the process took about four years, says Budd. Its plant (Carbonyl Metal Products) at Conshohocken, Pa., is in production.





Main Generating Plant — Niagara Power Project — Lewiston, New York

Like a massive stage setting, viewed from the Canadian side, is the Main Generating Plant of the Niagara Power Project of the Power Authority of the State of New York. Located five miles below Niagara Falls, this power project will harness the full potential of the United States share of Niagara Falls. When completed, it will produce 1,950,000 KW of electrical power.

"Plymouth *versatility* speeds power project"

Six remote-controlled Plymouth Locomotives help speed construction operations for Merritt-Chapman & Scott Corporation, contractor for the main generating plant of the giant Niagara Power Project. In round-the-clock operations, these locomotives move concrete cars from the batch plants to the gantry cranes which place the concrete buckets in position for pouring.

Each Diesel-hydraulic Locomotive is operated from a control station on the concrete car, where the operator can oversee car spotting under the batch plant and attach the crane clevis bolts to the pouring buckets at the construction site. Visibility is excellent in both directions and full control is exercised without an operator on the locomotive itself.

Special problems find quick solution in Plymouth Locomotives. On-the-job dependability and minimum maintenance, coupled with smooth hydraulic power transmission have made Plymouth the choice on construction and tunnel jobs the world over. To check on a Plymouth Locomotive or Mine-O-Motive suited to your haulage needs, simply send a brief outline of your operations to: The Fate-Root-Heath Company, Dept **A-1**, Plymouth, Ohio. Purchase Plans available.

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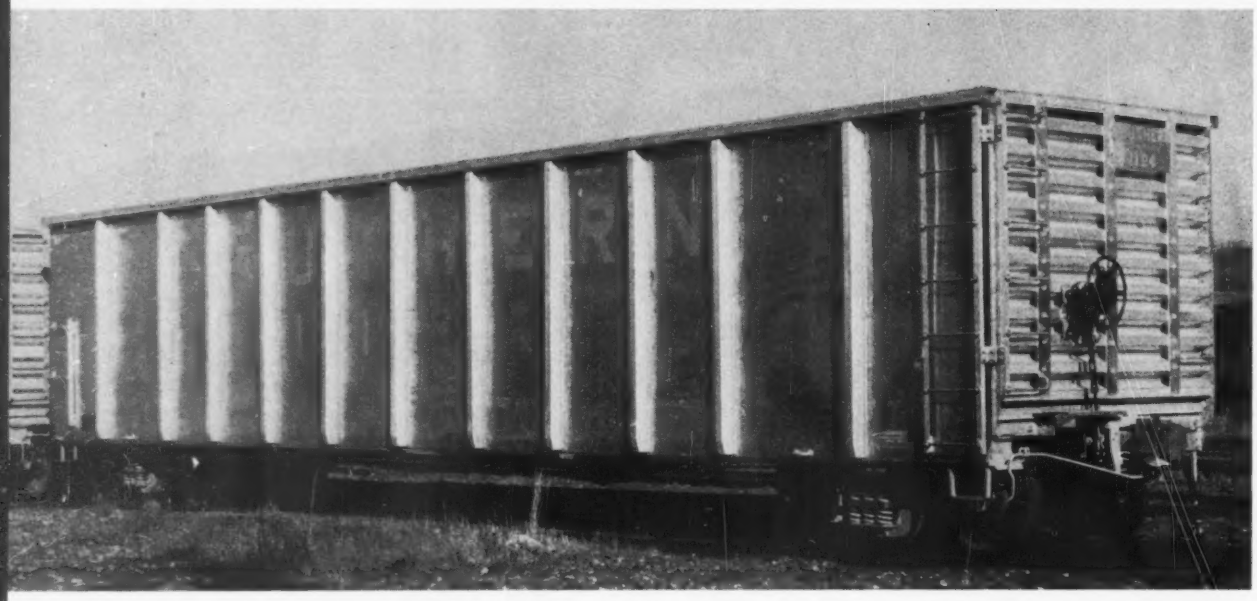


Aluminum Freight Cars Carry Bigger Payloads

All-welded design expected to repay added cost in less than three years, says Southern Railway System. Construction took more than 18 million lb of aluminum

EARLY THIS month, 1205 aluminum gondola and hopper cars (nearly 18 train lengths) were placed in service by the Southern Railway System, Washington. Their purchase price: $25,309,000.

Southern's president, Harry A. De Butts, calls it "a worthwhile breakthrough in the use of light metals in railroad cars."

The road will use the gondola cars to haul coal for a southern electric utility; the hopper cars will handle bulk grains, ceramics, and powdered materials.

Here are some of the reasons cited for the move to aluminum:

- Each gondola will carry 4 1/3 additional revenue tons of coal—an increase in carrying capacity of 6.1 per cent.
- A typical, 70 car train that's fully loaded will weigh 43½ tons less than the norm.
- Maintenance requirements are ex-

Long lineup of gas shielded, metal arc welders used to join formed underbody sections of aluminum plates at Pullman-Standard's Bessemer, Ala., plant. Firm had no previous experience welding aluminum

pected to be reduced.

A Southern Railway spokesman estimates that the added cost of aluminum cars could be written off at rates of 32 to 60 per cent a year, depending on business volume. (Steel cars cost $12,500 vs. $20,000 for aluminum.)

• Cars are all-welded aluminum plates and extrusions of Reynolds' alloy 5064. Nearly a score of gas-shielded welding units were purchased by Pullman-Standard Div., Bessemer, Ala., Pullman Inc. to handle the order. Their cost: More than $300,000.

Construction started last December. Production ran about 16 cars per day. Each car took about 7 miles (150 to 180 lb) of aluminum welding wire, says Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York.

Plates were sawed rather than flame cut, and joints were prepared by brushing with stainless wire wheels.

The aluminum portion of the car rests on regular steel trucks and center sill. Bolts and rivets were used to join the dissimilar metals.

Magor Car Corp., New York, built the 455 covered gondolas. Cars are divided into two, three, or four compartments. The largest cars are some 10 ft longer than standard, an increase in volume made possible by the weight saving, claims Reynolds Metals Co., Richmond, Va.

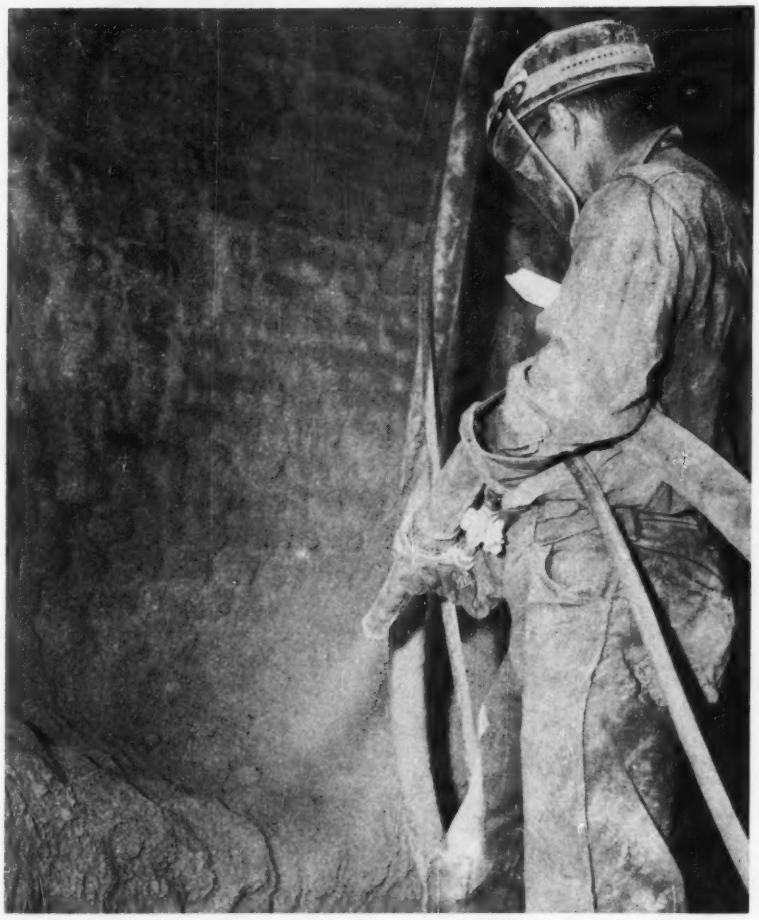
Southern Railway officials declined to say how long they expect the aluminum cars to last.

Gas Turbine Blower for Blast Furnace Ordered

A gas turbine for blast furnace blowing will be installed at U. S. Steel Corp.'s South Works, Chicago.

Built at Westinghouse Electric Corp.'s Steam Div. plant, South Philadelphia, Pa., the turbine will deliver 125,000 cu ft of air per minute to the blast furnace in addition to the air it supplies its own combustion system.

The unit will require less space than a conventional blower and boiler, and will use practically no water. Because the blast furnace gas is burned directly in the turbine, a boiler is not required.



Castable refractory material is sprayed on worn brickwork inside the stack. The coating, 20 to 33 in. thick, was applied in five days

Blast Furnace Is Repaired With Spray-On Refractory

DOWNTIME for blast furnace lining repairs can often be minimized by treating damaged walls with spray-on castable refractory materials. The technique was used by Colorado Fuel & Iron Corp. to patch the lining of a furnace at the company's Pueblo (Colo.) plant.

Steel wear plates protecting the upper 16 ft of the furnace lining had worn away. The brick lining had also eroded badly.

The furnace had to be put back into service as soon as possible. Replacement of the worn brickwork would take too much time, so management decided the damaged area should be rebuilt with a thick coat of high strength, castable, refractory material.

While repairwork was underway, a convex concrete cap 8 in. thick (poured over the coke burden), sealed off gases inside the stack and provided a solid base for scaffolds.

The worn lining was sandblasted to produce a clean surface. Then two pneumatic hoses, operated at 70 psi, were used to apply a coat of the refractory material 20 to 33 in. thick. The repair job was completed in five days.

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Right! Whether it's a routine order or an emergency request for unusual or hard-to-get sizes, Foster gives you pipe "*plus*."

You get all your pipe when and where you need it, cut to length or fabricated in complete-package shipments, at lowest possible cost.

For non-pressure applications, check the unusual savings on Foster Structural Pipe. Foster's nationwide warehouses stock Tested & Structural Steel Pipe, 1/8" through 48" in all sizes and walls—"*plus*" Stainless, Seamless, Alloy, Pressure, Aluminum, Wrought Iron, PVC Pipe and Valves, Fittings, Flanges.

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Heat Treat Process Stirs Metalworkers

Improvement in all physical properties is claimed for thermomagnadynamics method

HEAT treatment by the Bassett process, called thermomagnadynamics by Research Development Corp., Gardena, Calif., has caused considerable discussion in the metalworking industry.

The developers claim a higher level of tensile and yield strength for steel, titanium, and other alloys treated by the process coincident with an increase in ductility. They say the method takes advantage of the inherent strength of such metals, developing a fine and uniform grain size.

A recent publication by Research Development states that on all metals it is continuing to improve on strength levels so far reported and that it has not yet reached the ultimate in properties obtainable by the process.

In addition to higher tensile strengths, the developers claim greatly improved yield strength, elongation, reduction of area, fatigue life, impact strength, notch sensitivity, and corrosion resistance.

• **Unconventional**—Few details of the process have been disclosed. It is performed after parts are shaped to final contours and is reported to involve specialized furnace equipment and time-temperature cycles differing from conventional practice. The company says that modifications required in conventional equipment are neither difficult nor expensive.

The developers have reported that patent applications are pending and they hope to set up a licensing system.

• **Firms Study Samples**—For the present, the heat treating operation is being carried out at Research Development's plant in Gardena and samples processed there are being examined by other companies.

Interest in the possibilities of improved strength and ductility is not limited to aircraft and missile applications. Manufacturers of consumer goods are likewise searching for means to reduce weight and costs.

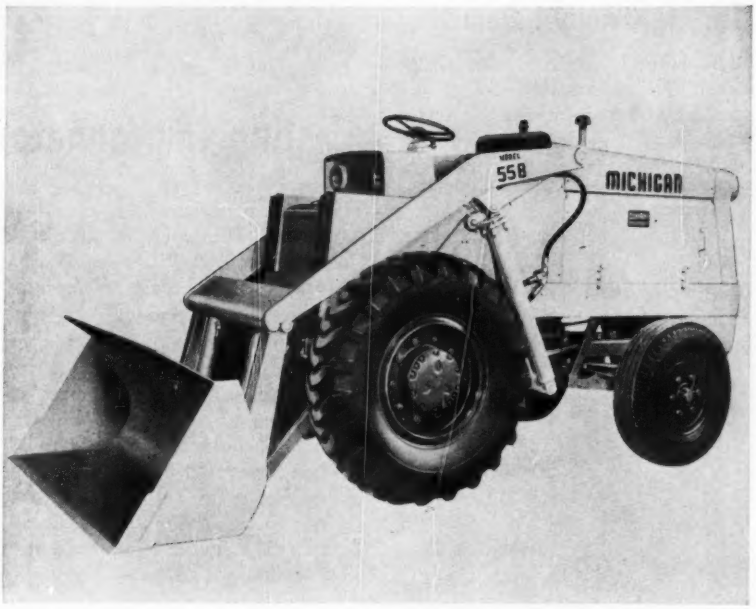
Tractor Has 5400 lb Capacity, Automatic Shift

THIS HEAVY duty tractor (Model 55B) is designed for industrial bulk material handling. It comes with a 1 cu yd bucket and has a lifting capacity of 5400 lb. Turning radius is 11 ft 2 in.

Maximum speed in forward or reverse is 26 mph. A 66.5 hp gasoline engine with bucket wheel drive and planetary gear reduction powers the unit. Standard equipment includes a Michigan power train with torque converter and automatic shift plus other machine features carried on larger Michigans of this type.

The unit has a total working weight of 10,200 lb. Maximum dumping height is 8 ft. Tire specifications: 9.00-16, 8 ply (rear) and 13.00-24, 8 ply (front).

For further information, *write* Construction Machinery Div., Clark Equipment Co., Pipestone Road, Benton Harbor, Mich.



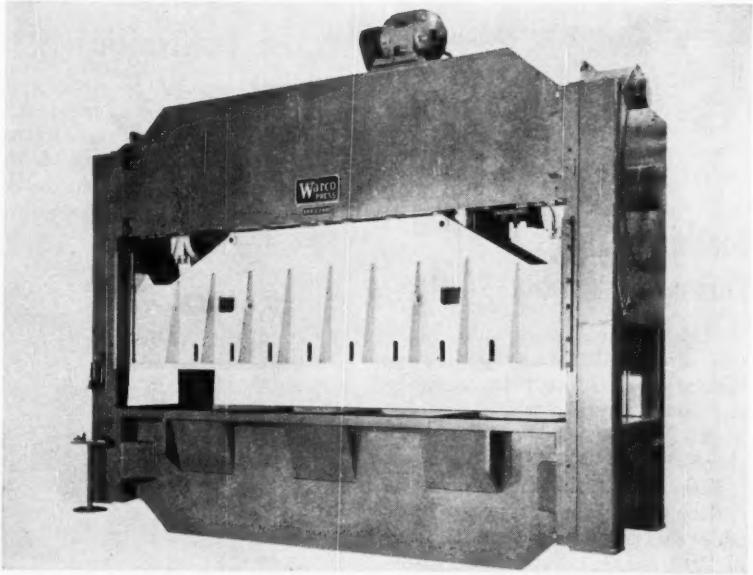
Press Handles Piercing, Blanking of Aluminum

PIERCING and blanking work can be handled by this Warco press. It was designed for production runs in aluminum. A press of this type has been installed for an aluminum parts manufacturer.

Capacity near bottom of the stroke is 500 tons. Distance between housings to clear is 240 in. The slide area is 72 x 240 in. Stroke length is 12 in. The press requires about 130 x 288 in. of floor area, weighs about 220,000 lb, and operates at 30 strokes per minute. It's equipped with a Warco pneumatic clutch and brake with electrical clutch control. Welded steel construction provides a strong, rigid frame.

Presses from 100 to 800 tons capacity for other applications are also available.

For further information, *write*



Federal Machine & Welder Co., 1745 Overland Ave. N.E., Warren, Ohio.

Press Type Welders Use Lightweight Ram

THE PRESS TYPE welder designated ENC is available in 30, 50, 75, and 100 kva ratings. It has a roller bearing guided ram of hollow construction, hardened semisteel, and jig ground. The ram is lightweight with minimum inertia and has a rapid followup on any welding condition. The ram section is deep from front to back, minimizing deflection from normally applied welding forces.

Welded steel construction is used in the unit. The cast semisteel head support is horizontally keyed and securely bolted and insulated from the upper head extension of the frame.

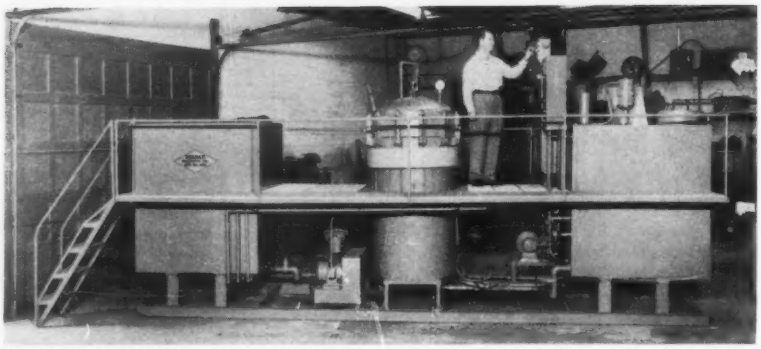
For further information, *write* Taylor Winfield Corp., 1050 Mahoning Ave. N. W., Warren, Ohio.

Machine Guides Rivet Through Assembly, Washer

WITH the Chicago rivet machine, you can simultaneously position a tubular rivet through an assembly and into a washer which provides a strong metal area for the rolled clinch.

The unit is an adaptation of a cutlery rivet setter. It makes possible the fast and secure riveting of light metals or any other material where the added protection of a washer is desired.

For further information, *write* Chicago Rivet & Machine Co., 950 S. 25th Ave., Bellwood, Ill.



Casting Impregnator Is Automatic

YOU GET package design and an automatic casting impregnation cycle in the Model A-101-G batch type sealing machine. The machine handles metal oxide sealants.

Pushing a button starts a cycle that includes drawing a vacuum, filling the autoclave with sealant, applying pressure, and returning the sealant to the supply tank. The autoclave is annually loaded and unloaded.

Working capacity of the sealant supply tank and the rinsing tank is 300 gallons. The autoclave has a working capacity of 225 gallons. Accessories and controls are mounted within the basic machine dimensions. A stairway is available for floor mounting. With the stairway removed, the same unit is suitable for pit installation. The unit is shipped fully assembled and ready for connection to air, water, gas, and electric lines. All components are raised off the floor for easier maintenance and housekeeping.

For further information, *write* Prenco Mfg. Corp., 2605 W. 14 Mile Rd., Royal Oak, Mich.

Welder, Powerplant Does ac, dc Welding

THE LIGHTWEIGHT and versatile Miller welder-powerplant delivers 300 amperes at 30 volts ac or 225 amperes at 30 volts dc welding power at 100 per cent duty cycle.

Open circuits of 75 volts ac and 65 volts dc assure good results with ac, dc, or ac-dc electrodes, says the company.

The unit can generate 7 kw of 115 or 230 volts ac. While welding, 1 kw of auxiliary 115 volts dc can be supplied. Other applications include warming viscous fluids for pumping, thawing frozen pipes, and battery charging and boosting. It's powered by a Kohler, 25 hp, two cylinder, air cooled gasoline engine. A Gold Star rectifier is used.

For further information, *write* Miller Electric Mfg. Co. Inc., Appleton, Wis.

Drill Press Feeds Are Powered by Air

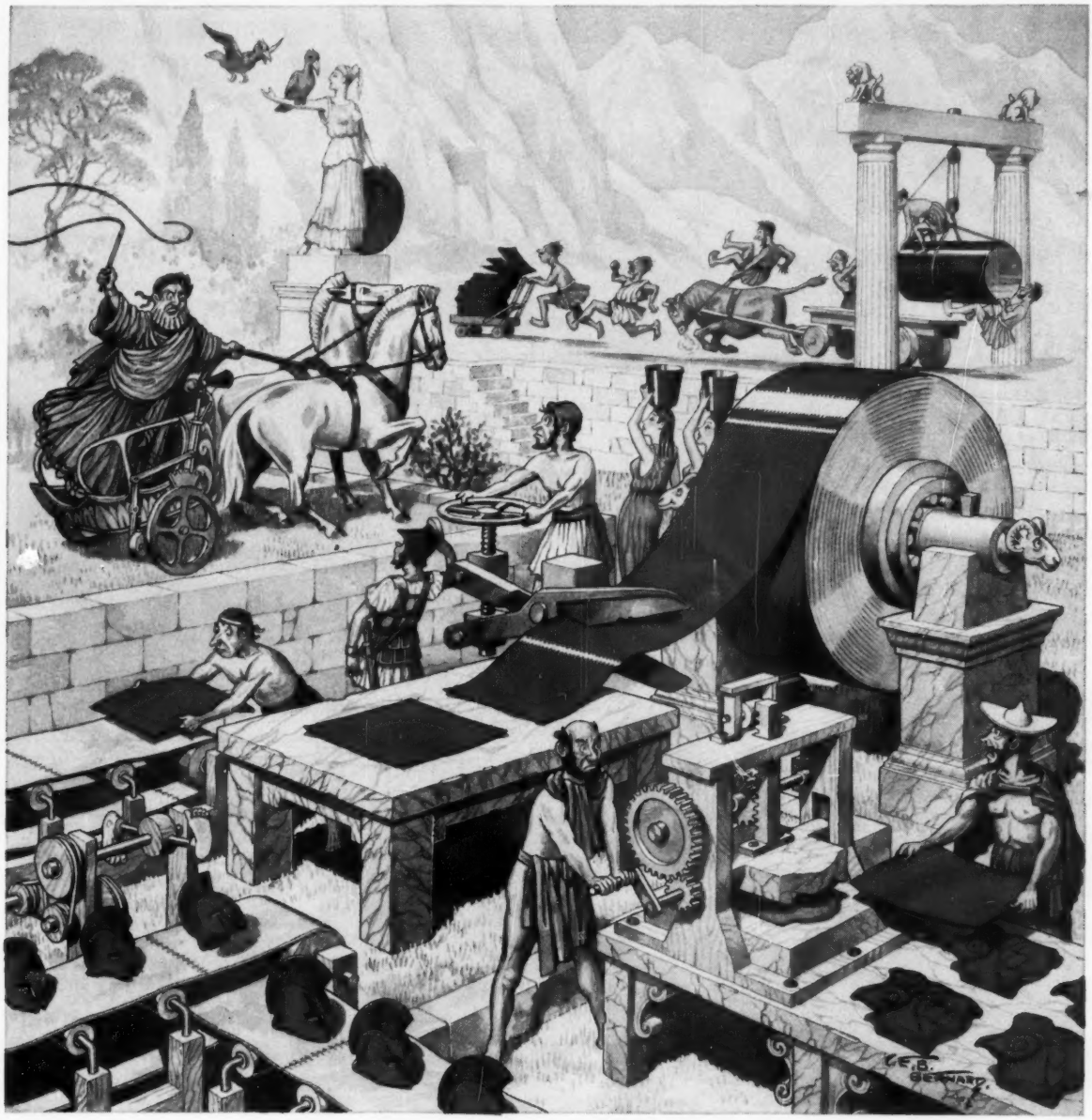
GEARED HEAD drill press feeds made by Beckett-Harcum are available in heavy duty models with either mechanical (manual) or electrical control. They're air powered.

Mounted on a 1 in. capacity drill-

Now it can be told

This engraved marble tablet recently uncovered in one of the long-lost Phrygian caves shows how Midas fooled the public. This stuff wasn't 14-karat at all. The "Midas Touch" is nothing but a myth. Midas used ColorRold* Stainless Steel, developed by Washington Steel Corporation. Gotta give the old charlatan a lot of credit though—he knew a good thing when he saw it.

MIDAS SPECS: 2 cubits × .025′ ± .001′ × coil, Type CCCII (302), Rb 82 max. Sunbrite gold, 50 glossimeter, 1 mil, paper interleaved, skidded for open oxcart only. 12 × 10^6 drachma max. wt. per coil.



ColorRold, an organic coated stainless steel, comes in eleven harmonizing colors, can be formed and drawn or textured and highlighted in an infinite number of designs and effects, now available for your architectural or product needs.

WASHINGTON STEEL CORPORATION
and ColorRold®
PRODUCERS OF *MicroRold®* STAINLESS STEEL
WOODLAND AVENUE WASHINGTON, PA.

ing machine, the geared power transmission arm does not protrude beyond the spindle to interfere with the operator. The outside gears are pick-off type and are interchangeable.

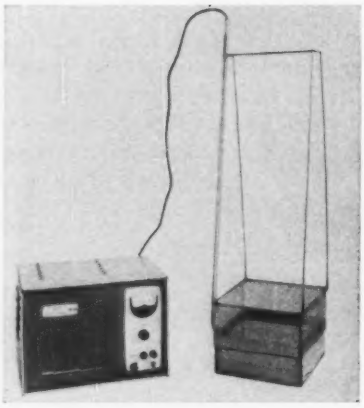
The drill point stroke and thrust can range from an 8 in. stroke at 625 lb maximum thrust, to a 2 in. stroke at 2500 lb maximum thrust (on a 1¼ in. pinion shaft at 100 psi air pressure).

For further information, *write* Beckett-Harcum Co., Wilmington, Ohio.

Ultrasonic Cleaning Basket Has Transducers in Bottom

BARIUM titanate transducers are sealed in the bottom of an ultrasonic cleaning basket made by Circo Ultrasonic Corp. After connection to a generator, the basket (Model CB125) can be submerged in many solutions for use as an ultrasonic cleaner.

Operating frequency is 40 kc. If desired, 300° F barium titanate can be used instead of the 180° F rating. The basket shown is 9½ in. long, 9½ in. wide, and 33 in. high. It weighs 16½ lb. Other standard



sizes are available.

For further information, *write* Circo Ultrasonic Corp., 51 Terminal Ave., Clark, N. J.

Heavy Duty Press Prevents Overloads

AN ELECTRIC, hydraulic press designed for heavy duty operations is rated at 150 tons by American Chain & Cable Corp. A factory preset bypass valve prevents overloading or damage to the press by the operator. The ram travel has a limit control. It mechanically moves the control lever to the neutral position when the ram has reached the maximum point.

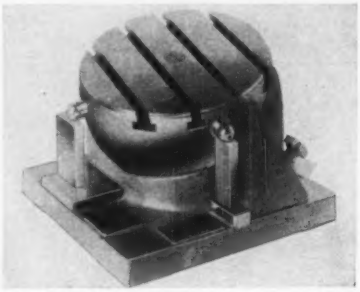
A motor and radial piston pump provide the hydraulic pressure. A helicoid gage records pressure readings. The power package is rated at 25 per cent duty cycle at the full capacity and at 50 per cent duty cycle at 110 tons.

For further information, *write* ACCO Equipment Div., American Chain & Cable Co. Inc., York, Pa.

Compound Angle Sine Table Made in Five Sizes

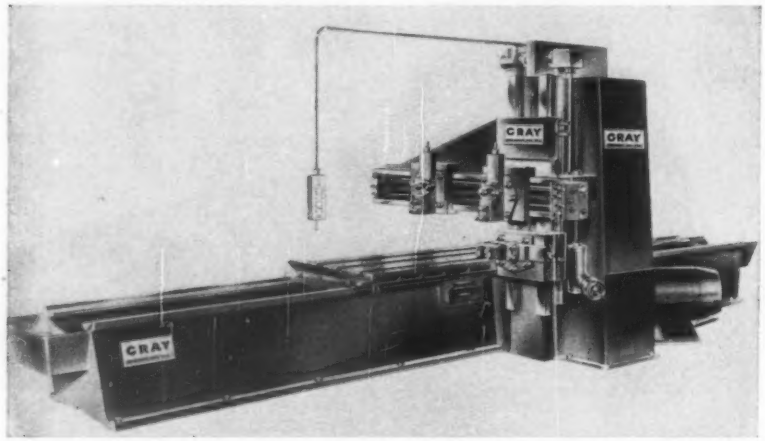
YOU CAN use this compound angle, sine table for inspecting jigs and gages and for making components on grinding and jig boring machines. It's accurate to within 10 seconds of arc. The unit is made in 9, 13, 18, 26, and 36 in. diameters.

With this table any angle up to 45 degrees can be set as a single or compound angle. Other advantages include greater rigidity, better ac-



curacy, and a working surface that's always over the center of the base. The table can be used with Auto-Collimator and angle gage blocks for optical settings of angles.

For further information, *write* Engineering & Scientific Instrumentation Div., Engis Equipment Co., 431 S. Dearborn St., Chicago 5, Ill.



DESIGNED FOR FAST CARBIDE PLANING, this unit (the Gray Flying Scot) is available in nine combinations of table widths and heights. Basic sizes are 30, 36, and 42 in. The 60/75 hp variable voltage drive can be adjusted in the cut and return direction from 180 to 1800 rpm. The standard planer ratio is 6:1 with table speeds from 30 to 300 ft per minute. You can get single or double cutting heads, or any combination of both. For further information, **write** Dept. V-202, G. A. Gray Co., 3611 Woodburn Ave., Cincinnati 7, Ohio

Belt, Disc Finishing Unit Does Grinding, Surfacing

YOU CAN perform 90 per cent of all shop finishing operations with the Walker-Turner combination belt and disc finishing machine. The unit uses a standard 4 in. abrasive belt and a 12 in. abrasive disc.

The company says the unit can do custom or production finishing operations efficiently and economically. It's suitable for grinding, surfacing, or polishing steel components,

MORSE TOOLS HELP BUILD CHARACTER FOR EIMCO

...Morse tough tools cut smooth, fast holes...help speed production of mining machines with guts.

For rough, rugged power, you can't beat Eimco mining machines. They move rock and ore . . . carry them up steep grades quickly and easily.

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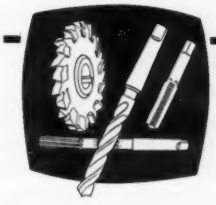

Morse means more production . . . smoother, more accurate production . . . with every type of cutting tool from drills, reamers, taps and dies, to end mills, milling cutters, slitting saws and "specials". So, if you want the best from every cutting tool you buy, mark your order "MORSE". For if you want *Morse Quality*, there's only one way to get it . . . *specify Morse.*

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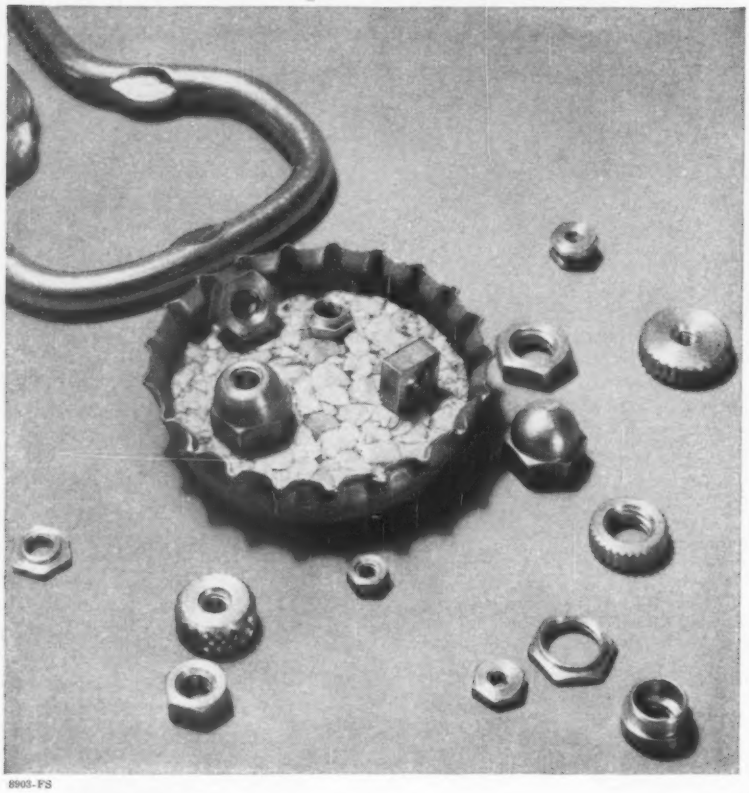

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Working on the premise that only the best is good enough, Fischer has developed highly specialized production and quality assurance methods for precision miniature nuts. And to assure uniform accuracy and dependability, *Fischer maintains tolerances that exceed current industry standard specifications.* Result: Fischer turned nuts are solving fastening and assembly problems in all types of miniaturized electrical and electronic equipment.

Fischer can supply miniatures in standard, special and odd sizes or shapes ranging from ⅛" hexagon, with standard or special threads from No. "0". All are furnished cleaned, burrless and ready to use.

If you are looking for extreme accuracy and prompt "on schedule" delivery at competitive prices . . . let Fischer quote your next miniature nut order.

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NEW PRODUCTS and equipment

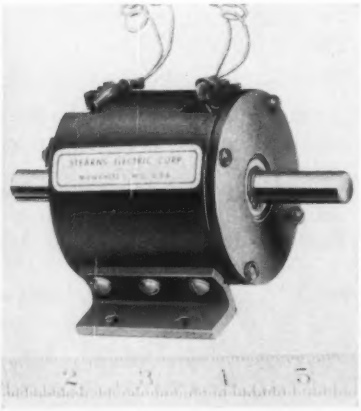
diecastings, aluminum, brass and copper parts, and other materials. It can also handle finishing operations on wood and plastic.

Tools can be sharpened on the unit. A special idler drum guard facilitates hollow grinding of wood chisels, lathe chisels, carving tools, and plane irons. There are no wheels to dress and quenching in water is unnecessary.

For further information, *write* Walker-Turner Div., Rockwell Mfg. Co., Dept. 44, N. Lexington Avenue, Pittsburgh 8, Pa.

Miniature Clutch-Brake Is Magnetically Set

THE MINIATURE clutch-brake combination made by Stearns Electric Corp. is available in dc ratings through 90 volts. It's magnetically set. With the current on the clutch magnet and off the brake magnet, the clutch operates. When the cur-



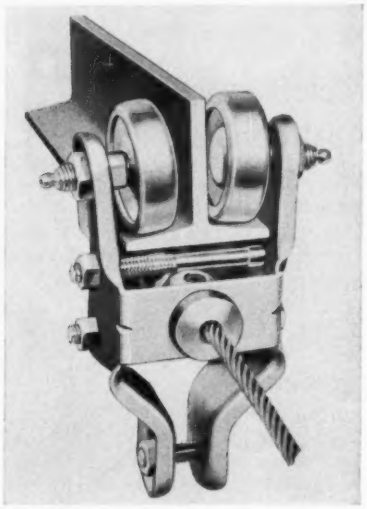
rent is reversed, the brake operates. If free wheeling is required, the current is turned off both magnets.

The unit has 8 lb-in. torque on both the clutch and brake side.

For further information, *write* Stearns Electric Corp., 120 N. Broadway, Milwaukee 2, Wis.

Trolley Rated at 125 lb Does Work of Bigger Unit

A 125 LB capacity trolley has been added to the 80, 160, and 250 lb models made by the Conveyor Div., American MonoRail Co. The unit can handle jobs that formerly required the 160 lb rating. It can also be substituted for the 80 lb unit on existing Cable-Way systems if more capacity is desired.



The unit rides on an inverted T-rail track. Sideplates fit into grooves in drive lugs and are bolted together. The drive lugs are factory mounted on the cable while it is under working tension.

For further information, *write* American MonoRail Co., Fourth & Franklin Streets, Tipp City, Ohio.

Rotary Tables Index Heavy Off-Center Loads

A LINE OF rotary tables which can index extra heavy loads (even when placed off center) has been developed by Cincinnati Gilbert Machine Tool Co. When the tables are in-

ROLOCK®
FABRICATED ALLOYS
HEAT AND CORROSION RESISTANT

RETORTS • BASKETS • SCREENS • GRIDS

ROLOCK "ALL THE WAY"
for a better operating
cost picture on your pit-type furnaces

Rolock has so many successful pit-type furnace equipment installations . . . so many satisfied repeat customers . . . that we feel very confident in promising you equal satisfaction.

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The best way to gain these benefits is to send us your next order.

* ROLOCK GUSSET DESIGN: An exclusive ROLOCK feature developed out of years of practical experience. Permits properly controlled and supported seal-rim expansion and contraction . . . greatly extends life of retorts.

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Easier Operation, Lower Cost

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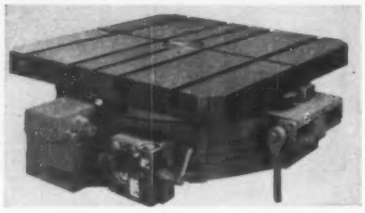
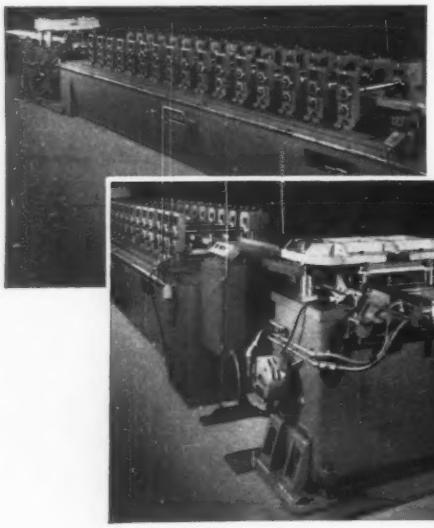
NEW PRODUCTS and equipment



dexed, an air-oil mist lifts the top through valves in the way surface of the base. The top floats on about 0.001 in. of mist. It prevents corrosion from moisture in the lifting air, says the company.

The lift is automatically distributed so an offset load is always supported. Standard sizes start at 36 in. (round or square). Special sizes may be ordered. The tables can be used with horizontal boring mills and milling planers. They are also furnished on runways for use with floor type horizontal boring mills.

For further information, *write* Cincinnati Gilbert Machine Tool Co., 3366 Beekman St., Cincinnati 23, Ohio.



Roll Form Coil Stock

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BY THE MILE

Fully coordinated roll forming production lines, such as the above Ardcor installation, produce finished products on a miles-per-day basis.

Here an embossed, aluminum section of .019" stock is being formed by a leading aluminum manufacturer at a rate of 200 ft. per min. An Ardcor Prenotch Press, lower photo, and an Ardcor Cut-Off Press, upper left top photo, complement the high performance of the popular Ardcor 1-F Roll Forming Machine.

Ardcor can furnish complete roll forming lines for a wide variety of shapes and sizes—to customer specification.

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DESIGNERS, ENGINEERS AND BUILDERS: Single Roll Forming Machines or Completely Automated Production Lines for Cold Forming; Ferrous and Non-Ferrous Electric Weld and Lock Seam Tube Mills • Forming Rolls, Tubing and Pipe Rolls • Straightening, Pinch and Leveller Rolls • Cut-Off Machines • Slitters

Self-Contained Ultrasonic Cleaner Has Transistors

TRANSISTORS are used in the self-contained Model LGT-40 ultrasonic cleaning unit. It can clean precision parts, electronic components, investment castings, bearings, dies, molds, spinnerets, and other items.

Integral heating elements can be ordered to keep cleaning solutions at the proper temperature. The ½ gallon tank is removable for cleaning.

Generator output is 40 watts average (80 watts on peaks). Power input is 120 watts at 115 volts, 50 to 60 cycles ac. The unit is 14 in. deep, 7 in. wide, and 13 in. at its highest point.

For further information, *write* Branson Ultrasonic Corp., 40 Brown House Rd., Stamford, Conn.

Welder Eliminates Spatter, Breakthrough

WITH THE Model CP-3-VS welder, it's possible to make x-ray perfect Mig welds on aluminum, magnesium, stainless, and carbon steel sheets down to a thickness of 0.030 in.

The unit provides continuous slope and voltage adjustment (while welding) between the limits of 300 amperes at 30 volts and 25 amperes at 10 volts. Both spatter and burnthrough are eliminated.

For further information, *write* Miller Electric Mfg. Co. Inc., 781 Bounds St., Appleton, Wis.

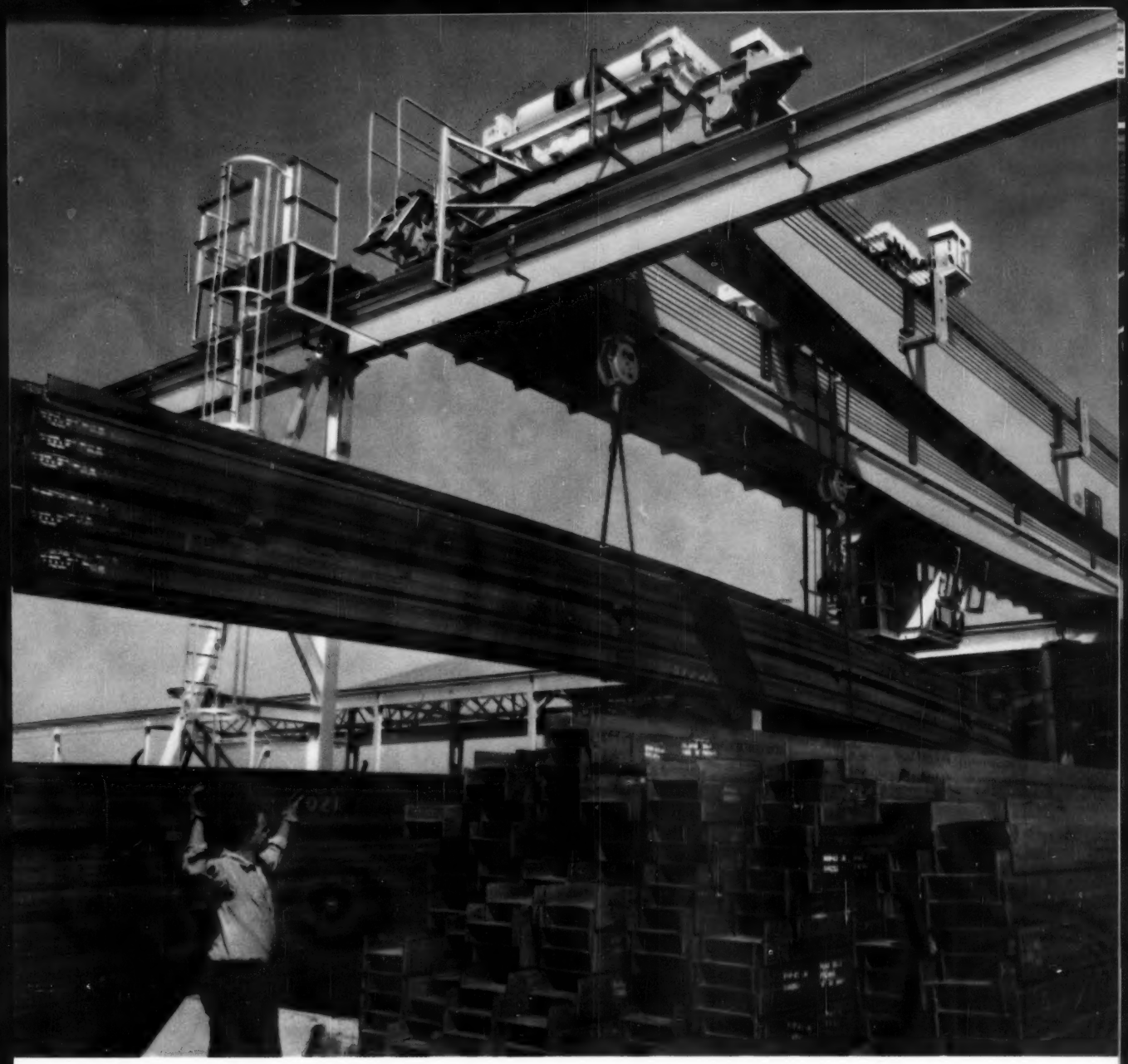


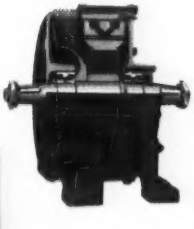
Photo courtesy Pittsburgh-Des Moines Steel Co., Fresno, Calif.

FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

IN STEEL FABRICATING: This double-trolley crane installation is a good example of the way Harnischfeger engineers design a P&H crane for each particular job. With this arrangement, long, awkward beams can be handled quickly, safely . . . without swinging . . . and with accurate control. In addition, the use of two lighter trolleys permits higher travel speeds, thus combining load stability with fast load handling.

Regardless of the material handling problems your plant may have, chances are P&H engineers have successfully solved similar problems. Reason? No other manufacturer has installed as many overhead cranes in as many different applications as Harnischfeger.

If you'd like more information on P&H job-engineered cranes, write for bulletin C-42, Dept. 119, Harnischfeger Corp., Milwaukee 46, Wis.



Cutaway view of P&H electric load brake . . . heart of P&H Magnetorque Control . . . which consists of a simple, indestructible rotor and stationary field through which braking forces are exerted electromagnetically.

P&H
OVERHEAD CRANES

HARNISCHFEGER
Milwaukee 46, Wisconsin

HE'S AN ATLAS WITH HIS RIGHT THUMB!

Every worker is a wonder-man when it comes to lifting, loading, or transporting shapes in this West Coast steel fabricating plant. That's because a P&H Balanced Design Hevi-Lift hoist provides all the muscle . . . and fine control . . . at any time, in any weather.

Balanced Design means matched components of equal high-strength. There are *no* weak parts in this hoist! It's totally enclosed, weatherproof and dustproof for outdoor use . . . never needs greasing . . . never requires brake adjustment . . . won't heat up even under severe duty cycles.

In short, P&H Balanced Design Hevi-Lifts *will stand up longer under heavier duty cycles — with less maintenance — than any other hoist made today!*

Bulletin H55 tells the whole story. Write Dept. 223, Harnischfeger Corp., Milwaukee 46, Wisconsin.

P&H
HEVI-LIFT HOISTS

HARNISCHFEGER
Milwaukee 46, Wisconsin

Photo courtesy Pittsburgh-Des Moines Steel Co., Fresno, Calif.

NEW literature

Write directly to the company for a copy

Aluminum Bearing Study

Case histories and engineering and test data about aluminum sleeve bearings and bushings are presented in a 90 page study. Ten case histories detail common and exceptional applications of light metal bearings. Aluminum Co. of America, Room 732, Alcoa Bldg., Pittsburgh 19, Pa.

Powder Parts Design

The powder metal process and its use in modern production techniques are discussed in a booklet. Compositions and properties of nonferrous alloys, commercial tolerances, design suggestions, and costs are covered. An applications section contains 27 case histories on use of brass and nickel silver metal powder parts. Market Development Div., New Jersey Zinc Co., 160 Front St., New York 38, N. Y.

Industrial Truck Costs

A 12 page brochure makes it possible to estimate industrial truck costs in minutes. Nomographs or alignment charts help show costs of depreciation, operation, and maintenance for gasoline and battery powered trucks. Lead Industries Association, 60 E. 42nd St., New York 17, N. Y.

Corrosion Tests

Results of corrosion tests (over an eight year period) on wrought iron and ten structural steels in salt water and lake water are contained in a 12 page report. The booklet contains comparative corrosion time curves, weight loss tables, and discusses test materials, conditions, methods, and results. Engineering Service Dept., A. M. Byers Co., Pittsburgh 22, Pa.

Flame Spray Processes

A bulletin presents engineering data about coatings applied by metallizing, thermospraying, or plasma flame techniques. It describes the deposition of metals, ceramics, carbides, and other high melting point materials. Metallizing Engineering Co. Inc., 1101 Prospect Ave., Westbury, N. Y.

Guide to NEMA Standards

The 1960 Guide to NEMA Standards Publications includes brief descriptions of 20 books produced last year. The books deal with equipment never before covered by NEMA standards. National Electrical Manufacturers Association, 155 E. 44th St., New York, N. Y.

Hardness Conversion

A chart shows the approximate relation between hardness by various testing systems and tensile strength of carbon and alloy steels. It covers the Brinell, Monotron, Vickers, Rockwell (B, C, and E scales) and Scleroscope. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Leasing Capital Equipment

The advantages of leasing are compared with bank borrowing, issuing new stock, sale of bonds or debentures, and the use of existing working capital. General Leasing Equipment Co., 5010 Liberty Ave., Pittsburgh 24, Pa.

NEW BOOKS

Motor Selection and Application, Charles C. Libby, McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36, N. Y., 486 pages, $13.50

Selection and application of electrical motors for specific industrial services are outlined. Load characteristics, service requirements, space limitations, duty cycle requirements, and safety are discussed. Over 290 charts, tables, and illustrations relate load variables to motor characteristics. The data include industrially acceptable standards of ASE, AIEE, and NEMA which apply to integral horsepower polyphase and dc motors.

Progress in Nondestructive Testing, Vol. 1, edited by E. G. Stanford and J. H. Fearon, Macmillan Co., 60 Fifth Ave., New York 11, N. Y., 267 pages, $12

Nondestrictive testing is here interpreted to include any type measurement carried out on solids, liquids, or gases for examining some aspect of physical, chemical, or even biological condition. The discussion includes reports on progress made in relating the properties of materials to each other and to the structural factors which produce them. Recent developments in visual examination techniques, penetrant testing, magnetic testing, radiography, eddy current testing, and ultrasonic testing are covered.

Engineering Manufacturing Methods, Gilbert S. Schaller, McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36, N. Y., 682 pages, $9.50

Each phase of engineering manufacture is discussed. Modern methods, equipment, and theories are emphasized. Use of aluminum, magnesium, cermets, and other relatively new materials are covered. An introductory chapter includes new information on nucleonics and cybernetics. Cold shaping ideas are presented in detail. Other subjects discussed: Hot shaping, molding, automation, vacuum melting, metal degassing, welding, heat treating, and spark machining.

Industrial Instrument Servicing Handbook, Grady C. Carroll, McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36, N. Y., 848 pages, $16

Design principles, service and maintenance procedures are discussed in detail. Over 50 types of instruments are covered. The book is applicable to instruments and controls manufactured by over 40 companies. In addition to photographs, circuit diagrams, and other illustrations, the volume has organization charts and scheduling systems for preventive maintenance and troubleshooting charts that help locate faulty components without a complete analysis of the circuits.

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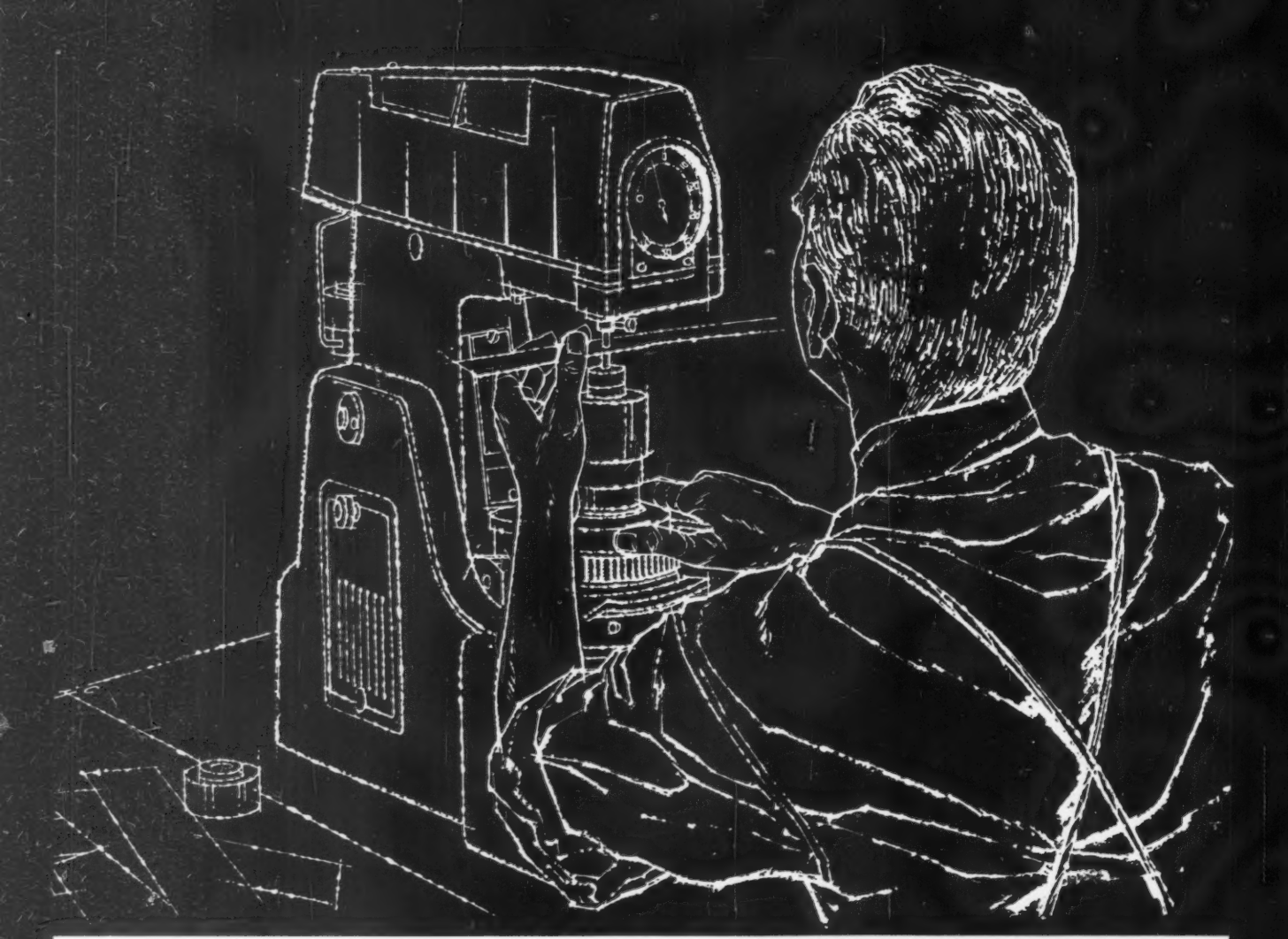

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to your specifications with

J&L Cold Rolled Strip Steels

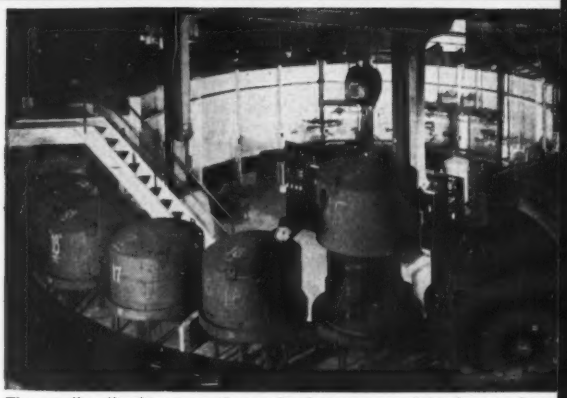
Variations within standard commercial limits of hardness for strip steels may not provide the quality needed for most critical applications.

At J&L the newest equipment and techniques are used to provide controlled hardness—to your specifications.

Basic oxygen furnaces, high standard open hearth practice and electric furnaces provide optimum melting conditions, new hot strip mills are specifically designed to produce the finishing temperatures needed for inherent quality. Cold mills, annealing and normalizing furnaces and other equipment are designed specifically for precision strip steel processing.

With an organization experienced in specialized strip steel processing, your most rigid specifications can be met consistently.

For your convenience, precision strip facilities are available to you in our plants at Youngstown, Indianapolis, Los Angeles and Kenilworth (N. J.)



The small unit rotary annealing method assures precision temperature control and develops optimum hardness and microstructure for high carbon, low carbon and alloy strip.

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TEMPERED SPRING STEEL • ZINC AND COPPER COATED

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Youngstown 1, Ohio

Users Demanding Fast Deliveries

HE WHO PROMISES fastest delivery gets most of the business in today's competitive steel market. Seldom have buyers been so intent on keeping their inventories at the lowest levels that will support their production plans. They have three good reasons for believing that there's no great risk in keeping minimum stocks: 1. The mills have ample capacity for every product. 2. There's no threat of another strike until June 30, 1962. 3. Prices aren't likely to rise before December when wage rates go up.

Competition for new business is especially keen in bars, buttweld pipe, and flat rolled products. To get orders, steelmakers are expanding their own inventories of slabs and coils. Although they normally need four to five weeks' leadtime on cold rolled sheets, they can cut the time in half by processing semifinished material.

SCHEDULING MADE DIFFICULT— Ironically, consumers are making it hard for steelmakers to give them the kind of service they want. By waiting until the last minute to order, they prevent the mills from firming up their rolling schedules. Steelmakers must delay production of certain sizes and shapes until they have accumulated enough tonnage to justify the rollings. In some cases, mills are so anxious to accumulate tonnage they'll accept orders that they would normally turn down as unprofitable.

APPLIANCE MAKERS HOPEFUL— In spite of scattered layoffs in the appliance industry, steel producers haven't had abnormally high cancellations. Widely circulated reports of a leading appliance firm's layoffs at one plant failed to mention compensating additions to its labor force in another city. Appliance industry spokesmen admit that sales aren't up to expectations, but they're still hoping to equal or better last year's excellent record. (See Page 54.) Mill officials believe the appliance makers will have to coast along for a while until the big inventories of unsold finished goods have been whittled down. No pickup in appliance steel buying is expected until August, when the manufacturers will start volume production of their 1961 models.

AUTOMAKERS SITTING TIGHT— Recent gains in new car sales haven't been reflected in additional steel buying. Sheet producers say the automakers have plenty of steel—probably enough in stock and on order to finish their 1960 model runs. The car companies have told at least two Detroit mills that they have no plans to enter the market before late June or early July. Any buying that's done in the interim will be limited to stocking small tonnages of specialty items.

IMPORT THREAT PERSISTS— In February (the latest month for which figures are available), 471,000 tons of foreign steel were landed at U. S. ports. The January figure was 465,050 tons. The total for two months, 936,050 tons, is almost double the 470,138 tons imported in January-February, 1959. Heavy imports of buttweld pipe were cited by one American steelmaker last week as a reason for its decision to suspend pipe production and lay off 1500 workers. Competition from foreign pipemakers is especially serious on the West Coast.

PRODUCTION ADVANCES— Last week, steelmakers boosted their operations 0.9 point to 79.4 per cent of capacity. Production was about 2,261,000 ingot tons. April output was about 9.9 million ingot tons (vs. 11.6 million in March and 11.3 million in April, 1959).

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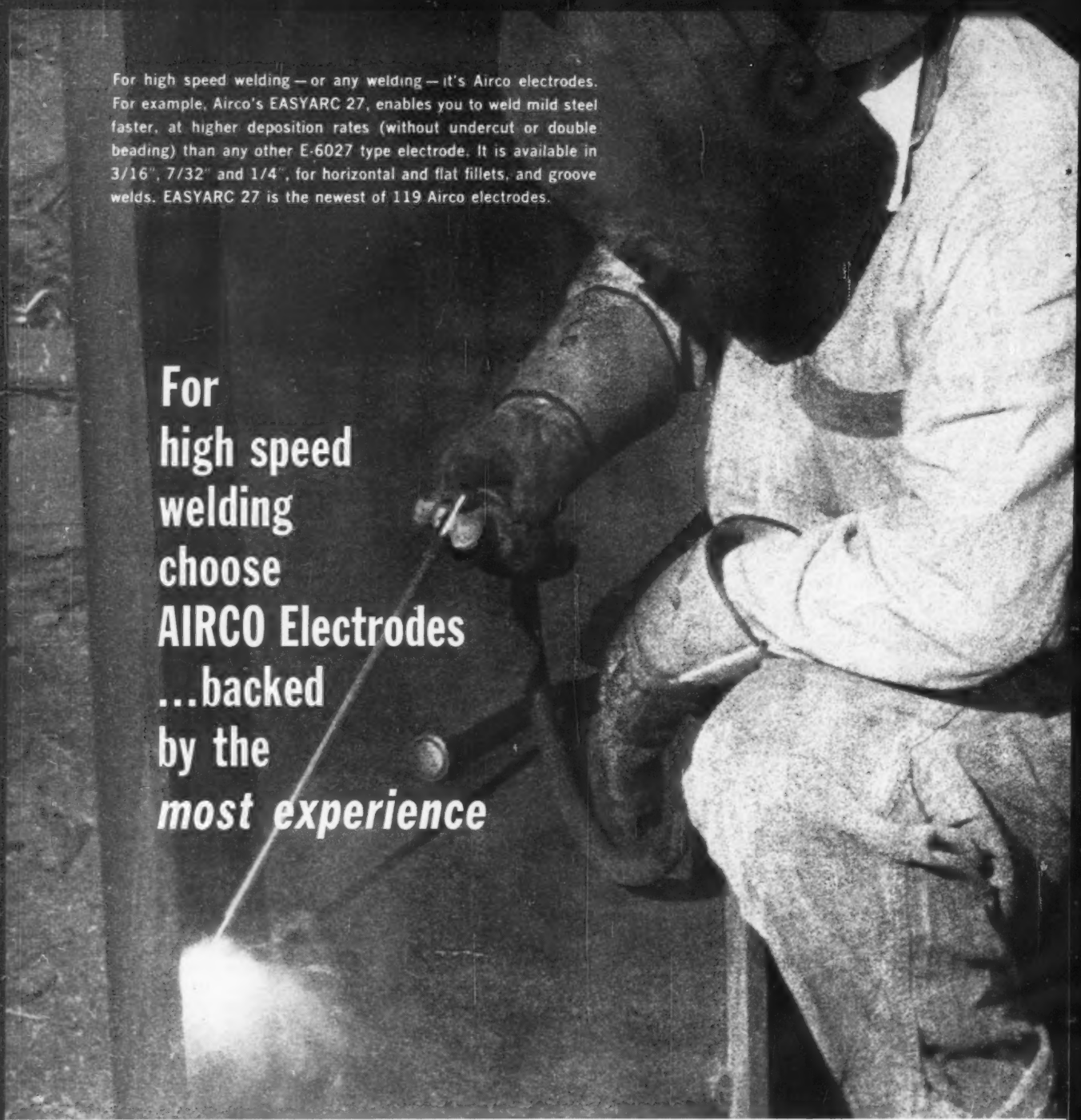
Wire	99	108

*Current prices were published in the Apr. 25 issue and will appear in subsequent issues.



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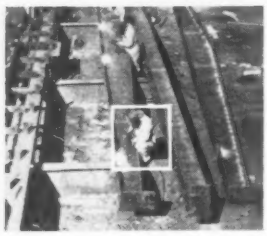

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STEEL
QUARTERLY SURVEY

MILL PRODUCTS	CURRENT INVENTORIES					3rd Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	5%	16%	41%	26%	12%	38%	54%	8%
COLD-FINISHED BARS	4%	20%	34%	28%	14%	30%	59%	11%
H & C-R SHEETS, STRIP	5%	9%	38%	29%	19%	44%	45%	11%
LIGHT PLATES	5%	3%	41%	33%	18%	38%	54%	8%
HEAVY PLATES	8%	3%	46%	29%	14%	34%	55%	11%
STRUCTURAL SHAPES	—	13%	42%	32%	13%	27%	70%	3%
COPPER & BRASS	6%	8%	44%	28%	14%	23%	69%	8%
ALUMINUM	7%	10%	48%	28%	7%	11%	78%	11%

FIGURES are percentages of respondents to STEEL's quarterly survey.
UNDERSCORED figures show how most respondents reported.

Buying Pendulum Swings to Normal

THE STEEL buying push has ended. Purchasing agents have resumed buying based on consumption, and, in some cases, are even paring stocks. Business is good, but the lack of expected zoom in the business upturn has left many firms with full inventory shelves. More than 83 per cent of the respondents to STEEL's quarterly survey of metal buyers have reserves good for 30 days or more. And 40 per cent report they are overstocked in at least one product category.

The situation has caused some observers to believe the present buying pattern represents a move which will eliminate many of the peaks and valleys in inventory accumulation (see STEEL, Apr. 11, p. 65). Reasons: Short leadtimes, excess capacity, and the high cost of tying up money in inventory will keep orders on an even flow.

• **Outlook**—A return to "normal" buying is seen as 57 per cent of STEEL's respondents expect stocks to be at present levels by the end of the quarter. Some inventory reductions are suggested by the 34 per cent who say reserves will be lower by Oct. 1. Only 9 per cent forecast an upturn.

All product groups experienced a gain in the 60 to 90 day category and a sharp drop in the 10 to 30 day period. Overstock mentions were the highest they've been in some time. Most frequently mentioned: Hot and cold rolled sheets and strip, hot rolled carbon bars, and light plates. Poor weather is partly blamed for the generally heavy accumulation of plates and structurals.

Only 11 per cent of the purchasing agents polled revealed delivery problems. That's quite a skid from the 60 per cent who had such complaints last February.

• **Nonferrous**—About 23 per cent of the copper users anticipate a decrease in stocks during the third quarter. Close to 69 per cent see no change. The metal is in good supply, and a drop in price is expected this summer.

Aluminum buyers who plan inventory boosts or expect a decline are evenly divided (11 per cent), indicating a stable market situation.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 107 & 108

Order cancellations and pushbacks are bottoming out in the light, flat rolled steel market, but only galvanized sheets are under any noticeable pressure, attracting some interest in shipments beyond the current quarter. Cold rolled sheet deliveries now fall mostly in the latter part of June, but so far little inquiry for July tonnage has appeared.

Hot rolled sheets can be had for shipment before the end of May in the case of some mills. The same is true of silicon sheets and enameling stock, reflecting increasing lag in household appliance requirements.

The letup in cancellations is thought due to reduction in order backlogs to relatively small volume. Buying, however, is expected to continue on an immediate needs basis for some time.

To some extent, the slow pace of buying reflects the lack of inventory building by consumers in contrast with a year ago, when heavy tonnage was accumulated in anticipation of a midyear steel strike. With deliveries relatively prompt, there is no incentive for users to order far ahead.

A Midwestern mill can still book hot rolled sheets for late May shipment, but it is filled up for the quarter on cold rolled and galvanized sheets, and tin plate.

The Raritan (N.J.) Arsenal closes May 3 on 295 tons of cartridge clip strip; 145 tons will be negotiated.

Despite layoffs in the appliance industry, sheet producers haven't had abnormally high cancellations from the range, washer, and refrigerator makers. There have been some deferments, however. Mill officials think the appliance firms will coast along for a while until their big inventories of finished goods have been whittled down. No pickup in steel buying on appliance account is expected until August, when volume production of 1961 models starts.

Recent gains in new auto sales haven't been reflected in additional steel buying. Sheetmakers say the auto builders have plenty of metal, in stock and on order, to finish their 1960 production runs.

Steel Bars . . .

Bar Prices, Page 106

Hot rolled carbon bar producers are pushing up delivery schedules on some sizes, pending accumulation of sufficient forward tonnage to support rollings. In general, delivery promises range three to five weeks.

Consumers have ample inventories and are ordering only for current needs. Broadly, this applies to cold drawn bars as well as hot rolled, and alloys.

Some mills have cut back production of hot rolled and cold drawn bars. Backlogs are noticeably smaller with new orders lagging.

Demand for bars on small arms account is expanding in New England. Harrington & Richardson Inc., Worcester, Mass., has a supplemental contract for expansion of facilities to produce 10,000 rifles per month.

Officers of Bliss & Laughlin Inc. stated recently that the company's backlog of cold finished bar orders

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miller ELECTRIC MANUFACTURING CO., INC., APPLETON, WISCONSIN
Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

had declined over the last two months.

Meldon Steel Co. Inc., Westbury, N. Y., has booked an order for 300 tons of carbon bars from the Navy.

Stainless Steel . . .

Stainless Steel Prices, Page 110

While demand for stainless sheets and strip remains weak because of automotive cutbacks and widespread inventory adjustments, other stainless products are moving at a good rate. Producers of bars, billets, and wire have substantial order backlogs. Some firms are sold out for the next two to three months.

Mill producers of stainless wire are doing better than redrawers for two reasons: 1. They have most of the key accounts. 2. They make the larger diameter wires, which are selling better than the small sizes furnished by redrawers.

Wire . . .

Wire Prices, Pages 108 & 109

Despite the advancing spring, merchant wire products continue to move slowly. Deliveries are available within two weeks, with shipments of manufacturers wire being made within three to four weeks.

As stocks of wire rods increase, the demand for finished wire, including the manufacturers' grades, cold heading, and furniture wire, is declining. There has been a moderate increase in fastener requirements, but producers of wire products generally are competing sharply for volume, frequently on a delivery basis. Most grades of carbon wire are being shipped within four weeks at latest.

Influx of Foreign Steel Cuts Domestic Production

Heavy steel imports are blamed for production cutbacks at the Houston steel mill. Four hundred and fifty production workers have been laid off since January. The company is running at only 75 per cent of capacity compared with 100 per cent earlier this year. The plant's merchant and wire mills are shut down.

The influx of imports is expected to slacken this quarter; the heavy March inflow is attributed to December-January ordering. Buying has since declined. However, considerable unsold imported tonnage is on the market, and it's available at low prices.

Foreign mill prices are holding, and overseas agents are not promising any early declines. In fact, one Houston representative hints there may be an increase on reinforcing bars.

Imported steel was advertised for sale in New Orleans last week by a Miami, Fla., seller. Some prices were above published levels, others below. The seller quoted $6.08 per 100 lb on ¼ in. x 72 in. x 240 in. open hearth plates; $6.34 on ¼ in. x 84 in. x 360 in. plates; $5.78 on 1 in. x 72 in. x 240 in. plates. He offered 3 x 3 x ¼ in. angles at $5.77 and plain galvanized sheets, Sendzimir mill coils, 20 gage x 26 in. (about 4400 lb), at $8.15.

Those prices compare with foreign mill published prices at Gulf ports of $5.66 on structural angles and $9.40 on galvanized sheets in coils.

Additional foreign steel (from

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West Germany) was received at New Orleans as recently as a week ago. A vessel with a cargo of Belgian steel is reported en route to the same port.

The import situation is about the same on the West Coast. Speculators are offering tonnage at prices domestic producers can't compete with.

Foreign Trade Picks Up At Great Lakes Ports

With the St. Lawrence Seaway opened for the 1960 shipping season, a parade of foreign ships is headed for Great Lakes ports with a variety of products. Cargoes received at Cleveland last week included 920 tons of wire fencing, wire mesh, and steel plates. One vessel brought 80 Austin automobiles. Some 14,000 tons of Labrador iron ore were received at Ashtabula, Ohio.

Arrangements have been made by Republic Steel Corp. to ship cold rolled sheets via the Seaway to British auto manufacturers. Two cargoes totaling 500 tons will leave Cleveland May 9, and 2250 tons will be shipped a few days later.

Republic, which has exported through East Coast ports in the past, plans to use the Seaway this season if cargo space is available.

March Steel Output Fell Under That of Year Ago

Steel ingot production in March totaled 11,564,683 net tons (revised), reports the American Iron & Steel Institute. It compares with 11,126,806 tons in February, and with 11,567,745 tons in March, 1959. Output was divided: Carbon steel, 10,589,326 tons; alloy (other than stainless), 867,671 tons; stainless and heat resisting, 107,686 tons.

Production in the first quarter this year was 34,740,893 tons, of which 31,474,463 tons were carbon, 2,878,746 alloy, and 387,684 stainless and heat resisting. In the like period of 1959, output totaled 30,488,068 tons, consisting of 27,663,863 tons of carbon, 2,477,277 tons of alloy, and 346,928 tons of stainless and heat resisting steel.

The breakdown by states of production in March, and the first three months follows:

Steel Ingot Production
(Net tons)

States:	March, 1960 Totals	First Three Months 1960	1959
New York	641,159	1,866,163	1,609,876
Penna.	2,838,547	8,917,883	7,671,585
R. I., Conn., N. J., Del. Md.	775,689	2,325,876	2,115,367
Virginia, W. Va., Ga., Fla.	320,118	920,270	811,438
Kentucky	155,702	454,821	417,588
Ala., Tenn., Miss.	379,274	1,157,100	1,092,444
Ohio	2,203,355	6,611,004	5,566,010
Indiana	1,543,583	4,444,587	4,134,050
Illinois	1,014,633	2,956,357	2,466,614
Michigan	702,868	2,022,188	1,819,191
Minn., Mo., Okla., Texas	353,428	1,062,580	931,766
Ariz., Colo., Utah, Wash., Oreg.	358,942	1,093,548	1,041,089
California	277,385	908,516	811,050
Totals	11,564,683	34,740,893	30,488,068
Tonnage lost by work stoppages		59,800	80,800

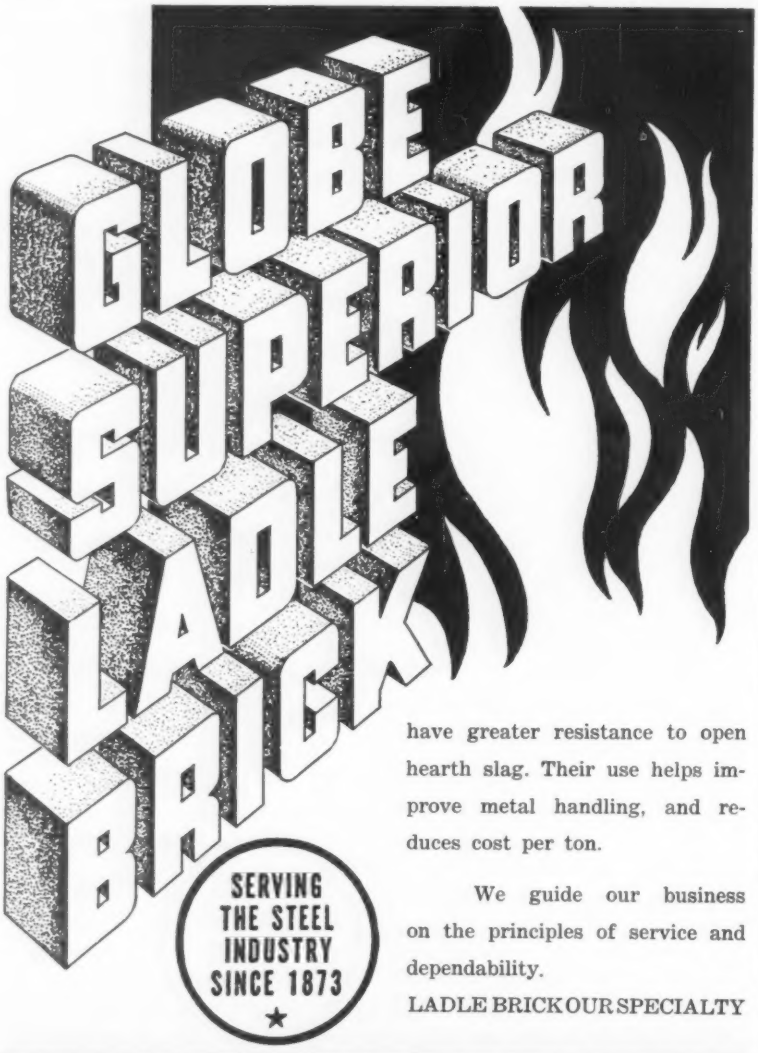
Data from the American Iron & Steel Institute.

Rails, Cars . . .

Track Material Prices, Page 109

The Southern Railroad System has placed an order for 200 new type freight cars (cost, $3.4 million) with the Bessemer (Ala.) plant of Pullman-Standard Div., Pullman Inc. The boxcars will be 50 ft long and have cushion underframes and special hydraulic equipment to absorb coupling shock, thus providing safe handling of fragile cargo.

Freight car buying isn't as strong



have greater resistance to open hearth slag. Their use helps improve metal handling, and reduces cost per ton.

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The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

as it was, but the carbuilders haven't canceled, or set back steel tonnage on mill order books.

Plates . . .

Plate Prices, Page 106

Oil and chemical requirements for plates are up slightly and railroad specifications have picked up a little but demand in general continues to taper. Reported improvement in line pipe demand in the Midwest is not reflected in other districts. In the East, shipwork is noticeably slow.

Orders are slack in New England. District distributors' stocks of the carbon grades are relatively high and well balanced. In some cases, service centers' inventories are heavier than desired. Some tank shops have built up stocks of completed small tanks and are out of the market for new plate tonnage; they overestimated underground tank requirements.

Sheared plates are available for delivery in two to four weeks. Universal plates can be had in three to five weeks and alloy plates in five to seven weeks. Heads and other specialties are offered for shipment in three to five weeks.

Tubular Goods . . .

Tubular Goods Prices, Page 110

Continued slackening in demand for steel pipe is reflected in further cutbacks in production. Wheeling Steel Corp. closed down the major departments at its Benwood, W. Va., pipe works, resulting in the layoff of about 1500 employees. The cut was attributed by Paul W. Koenemund, vice president, to a combination of bad weather (which held up considerable work) and heavy imports.

While steel imports in general are slowing down from the high level of 1959, pipe continues to come into the country in substantial volume. It is one of the major steel products which has grabbed a big share of the U. S. market.

The Wheeling production cutback follows similar recent reductions by other pipemakers, including the National Tube Div., U. S. Steel Corp.

Oil drilling operations accelerated again during the week ended Apr. 18, Hughes Tool Co.'s survey showing 1829 rotary oil rigs in operation vs. 2081 a year ago. The American Association of Oilwell Drilling Contractors reported 2391 (rotary and cable tool) rigs at work in the week ended Apr. 15.

The Texas oil industry continues to struggle against poor demand. An 8-day producing schedule is set for May with a daily allowable of 2,574,894 barrels, the lowest in almost two years.

Some makers of buttweld pipe attribute current slack demand to the fact distributors got faster poststrike deliveries than they had anticipated, and now feel they're overstocked. The impact of imports, however, is probably the biggest handicap, especially at coastal points. In California, for example, big tonnages coming in from Australia and Japan are being offered at prices 20 per cent under those quoted by domestic mills.

Stocks of crude oil and gasoline are now so big that steelmakers have little hope that drilling contractors will soon start operating more rigs.

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Downriver terminals are fully stocked with tubing, casing, and drill pipe. Most tubemakers will produce oil country goods at less than half of capacity this month.

Pig Iron . . .

Pig Iron Prices, Page 111

Demand for pig iron continues to decline. No change in the trend is expected before midsummer. Automotive castings demand for 1960 models is pretty well accommodated, particularly in view of the large inventories of cars in the dealers' hands. Demand for castings from farm implement manufacturers is off also.

Foundries serving other industries are buying only for immediate needs. They are purchasing coke sparingly. Because this raw material is bulky and seldom is stocked in large quantities, it is a better indicator of foundry activity than is the purchase of pig iron.

The decline in blast furnace operations continues. Of the Chicago district's 43 stacks, for instance, only 34 are currently producing.

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Blast Furnaces Increase Production During March

Blast furnace production (pig iron and ferroalloys) in March amounted to 7,793,411 net tons (79,715 ferromanganese and spiegeleisen), reports the American Iron & Steel Institute. It compares with 7,414,002 tons (71,533 ferromanganese and spiegeleisen) in February and with 7,510,051 tons (48,291 ferromanganese and spiegeleisen) in March, 1959.

Production in the first three months this year totaled 23,037,510 tons (227,592 ferroalloys) vs. 19,963,118 tons (142,137 ferroalloys) in the like period of last year. March production, broken down by states:

Blast Furnace Production—March, 1960
(Net tons)

States:	March Total	First Three Months 1960	1959
Massachusetts, New York	541,473	1,521,806	1,238,752
Pennsylvania	2,061,052	6,289,795	5,140,816
Maryland, Virginia, W. Virginia	694,497	1,998,043	1,742,573
Kentucky, Tennessee, Texas	179,509	499,883	462,107
Alabama	375,622	1,175,321	1,120,757
Ohio	1,484,096	4,398,788	3,751,960
Indiana	872,871	2,530,870	2,420,989
Illinois	685,830	2,044,065	1,695,795
Michigan, Minnesota	527,574	1,452,833	1,304,063
Colorado, Utah, California	370,887	1,126,106	1,085,306
Totals	7,793,411*	23,037,510†	19,963,118‡

*Includes 79,715 tons of ferromanganese and spiegeleisen.
†Includes 227,592 tons of ferromanganese and spiegeleisen.
‡Includes 142,137 tons of ferromanganese and spiegeleisen.
Data from American Iron & Steel Institute.

Distributors . . .

Prices, Page 111

The steel distributing industry in the Southwest and along the coastal regions is encountering the stiffest competition in 20 years. That's the opinion of several large interests in those areas. They point out that supplies, including imported material, are ample to cover all anticipated needs. The buyer can demand what he wants in the way of service, quality, and deliveries.

Demand is improving in those sections of the country where favorable weather is stimulating construction activity. April sales are estimated at 10 to 15 per cent over March totals in the West, Southwest, and Southeast, while holding steady in other areas.

Semifinished Steel . . .

Semifinished Prices, Page 106

The national ingot rate went up a little last week, rising to 79.4 per cent from the revised rate of 78.5 for the preceding week (the original estimate was 80.9 per cent). However, a gradual decline over the next two months is expected; some observers predict a total drop of 5 to 7 points.

Increases were reported last week at: Pittsburgh, Detroit, Chicago, St. Louis, and in the West. Declines were at: Buffalo, Youngstown, Cleveland, and Cincinnati. The rates in the Northeastern and Southern districts held unchanged (see table of comparative rates on Page 104).

For the last four months, shipments of finished steel from the mills have been higher than anticipated.

Some steelmakers are still operating close to capacity. Inland Steel, for example, hasn't been able to improve its semifinished inventory position since the strike. With its finished steel order backlog declining, the company will make some headway in rebuilding its semifinished stocks.

Kaiser Steel Corp. is operating only one of three oxygen converters and five of nine open hearths at its Fontana, Calif., plant.

Structural Shapes . . .

Structural Shape Prices, Page 106

Structural fabricators in the Midwest have absorbed a large part of their steel inventories, and, as they book new jobs, find it necessary to place additional tonnage with the mills. New work frequently requires more tonnage of a size than the fabricator has on hand. Special sizes are often required.

In general, fabricating shops have lowered their backlogs, and their deliveries are back to normal. With plain material plentiful, orders are being placed with mills on the basis of the best deliveries offered.

In New England, heavier bridge volume is being estimated, but prices for fabricated and erected structurals in that district lack strength. Contractors are buying bridge steel from shops offering the lowest prices. Generally, they have no difficulty in getting bid quotations revised.

The Pacific Coast Div., Bethlehem Steel Co., Seattle, recently bid low and was awarded the contract for a state bridge in Curry County, Oreg. It bid $1,114,951. About 1650 tons of structurals are involved.

A $30 million bond issue to finance the second Lake Washington bridge is expected to be made within 60 days.

The seasonal pickup in structural activity in the East is disappointing so far. Some bookings of area fabricators in April were down from those in March. Deliveries on wide flange and standard shapes are easier; both are available for shipment in late May.

The Phoenix, Pa., producer is resuming operations after a suspension of several weeks.

STRUCTURAL SHAPES . . .

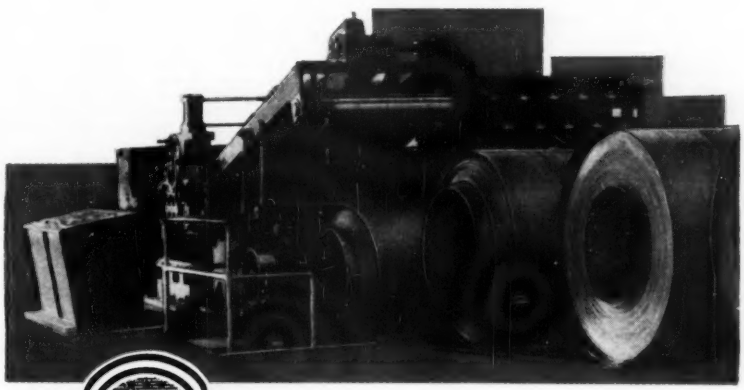
STRUCTURAL STEEL PLACED

1650 tons, Curry County, Oreg., 1157 ft high bridge, to Pacific Coast Div., Bethlehem Steel Co., Seattle, at $1,114,951.

830 tons, factory building, M. W. Welch Mfg. Co., Skokie, Ill., to Vierling Steel Works, Chicago.

Stamco heavy gauge feeding **equipment and trimmers** save you money.

Saves operating time and increases production. A single operator can quickly feed gauges up to ½" thick with Stamco electrically and hydraulically operated coil strippers and unwind equipment.



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New Bremen, Ohio, U. S. A.

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700 tons, laboratory-cafeteria, American Cyanamid Corp., Princeton, N. J., to Keystone Structural Steel Co., Trenton, N. J.; John McShain Inc., Trenton, N. J., general contractor.

400 tons, Westward Hotel, Anchorage, Alaska, to Isaacson Iron Works, Seattle; Warrack Construction Co., Seattle, general contractor.

263 tons, bridge in Lake County, Illinois, Route 99, No. 104R-HB, for the State of Illinois, to Vierling Steel Works, Chicago; Schiess Construction Co., Naperville, Ill., is contractor.

210 tons, Navy, General Stores Supply Office, Philadelphia, to Oregon Steel Mills Div., Gilmore Steel Corp., Portland, Oreg.

150 tons, telephone building addition, Spokane, Wash., to Pacific Car & Foundry Co., Seattle; Henry George & Sons, Spokane, general contractor.

140 tons, communications facilities in Alaska, to Pacific Car & Foundry Co., Seattle; S. S. Mullen Inc., Seattle, general contractor.

100 tons, men's dormitory, University of Maine, Orono, Maine, to Progressive Iron Works Inc., Winthrop, Maine; F. W. Cunningham & Sons, Portland, Maine, general contractor; reinforcing bars to Bancroft & Martin Rolling Mills Co., South Portland, Maine.

100 tons, miscellaneous appurtenances, Mayfield Dam project, to Star Iron & Steel Co., Tacoma, Wash., low at $24,729.

95 tons, bridge, Olympic Peninsula, Washington State, for U. S. Forest Service, to Isaacson Iron Works, Seattle.

STRUCTURAL STEEL PENDING

3500 tons, state bridgework, Berks County, Pennsylvania; bids May 12.

1200 tons, bridges and ramps, Providence, R. I.; bids in.

750 tons, Alaska Mental Hospital, Anchorage; bids in.

600 tons, also 2400 ft of H-piling, Yakima Ave. bridge, Tacoma, Wash.; bids to Tacoma May 11.

350 tons, tower footings, bids in to Bonneville Power Administration, Portland, Oreg.

250 tons, also 177 tons of reinforcing bars, powerplant, Hartwell, Ga.; bids about June 1, to U. S. Engineer, Savannah, Ga.

230 tons, including bars, state highway bridge, Paterson, N. J.; bids May 11, at Trenton, N. J.

195 tons, angles, Navy, General Stores Supply Office, Philadelphia; bids May 16; also 625 tons of sheet steel piling, May 11.

50 tons, also reinforcing, Washington State highway bridge, King County; bids to Olympia, Wash., May 10.

Unstated, addition to Providence Hospital, Anchorage, Alaska; bids soon.

REINFORCING BARS . . .

REINFORCING BARS PLACED

500 tons, estimated, St. Paul bridge section, Jones Falls Expressway, Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.; McLean Contracting Co., Baltimore, general contractor.

312 tons, University of Washington business administration building, to Northwest Steel Rolling Mills Inc.; James I. Barnes Construction Co., Seattle, general contractor.

250 tons, Hotel-Motel (Federated Stores Inc.), Braintree, Mass., to Northern Steel Inc., Boston, Aberthaw Construction Co., Boston, general contractor.

235 tons, laboratory-cafeteria, American Cyanamid Corp., Princeton, N. J., to U. S. Steel Products Div., U. S. Steel Corp., Philadelphia; John McShain Inc., Trenton, N. J., is general contractor.

230 tons, addition to state college, Ellensburg, Wash., to J. D. English Steel Co., Tacoma, Wash.; Newland Construction Co., Everett, Wash., general contractor.

230 tons, state bridges, Wakefield-Reading, Mass., to Scherer Steel Co., East Hartford, Conn.; J. F. Fitzgerald Construction Co., Canton, Mass., general contractor.

227 tons, highway bridges, Reading-Wakefield, Mass., to Sherer Steel Co., Hartford, Conn.; J. F. Fitzgerald Construction Co., Canton, Mass., general contractor.

212 tons, Washington State highway crossing, Pierce County, to Pacific Coast Div., Bethlehem Steel Co., Seattle; Ostruske-Murphy Inc., Tacoma, Wash., low at $227,086.

200 tons, including structurals, men's dormitory, University of Florida, Gainesville, Fla., to Florida Steel Corp., Jacksonville; A. C. Sanford Inc., Albany, Ga., general contractor.

150 tons, Washington State bridge, Pierce County, also miscellaneous, to Pacific Coast Div., Bethlehem Steel Co., Seattle.

120 tons, addition, Jewish Hospital, Louisville, to American Builders' Supply Co., Louisville; F. W. Owens Co., Louisville, general contractor; structural steel to the International Steel Co., Evansville, Ind.

REINFORCING BARS PENDING

360 tons, Yakima Ave. Bridge, Tacoma, Wash.; bids to Tacoma, May 11.

350 tons, Washington State highway bridges, Pierce County; bids to Olympia, Wash., Apr. 26.

320 tons, United Control electronics plant, Seattle; general contract to Cawdrey & Vemo Inc., Seattle.

200 tons, laterals and waterways, Columbia Basin project; general contract to Lewis Hopkins, Pasco, Wash., low at $1,213,629 to the Bureau of Reclamation.

185 tons, Puyallup River bridge; bids in to Pierce County (Wash.) commissioners, Tacoma, Wash.

100 tons or more, filtration plant, Chehalis, Wash.; bids May 9; John W. Cunningham & Associates, Portland, Oreg., engineer.

100 tons or more, Oregon State underpass, Jackson County; Hamilton & Thomas Inc., Eugene, Oreg., low at $349,224.

100 tons or more, 341 ft John Day Bridge, Wheeler County, Oreg.; Walder & Kenworthy, Portland, Oreg., low at $109,345.

PLATES . . .

PLATES PLACED

120 tons, four overhead electric traveling cranes, Naval shipyard, Portsmouth, N. H., to Cyclops Iron Works, San Francisco, $409,332.

100 tons, water tank, proving grounds, Tooele County, Utah, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

PLATES PENDING

3000 tons or more, 9½ mile Nooksack River supply line, 40 in. diameter; bids to Bellingham, Wash., May 18.

150 tons, 18 in. water pipe; bids to Chehalis, Wash., May 9.

100 tons or more, steel reservoir, also cast iron pipe; bids to King County District No. 101, Seattle, May 4.

100 tons or more, 500,000 gallon tank, pumps, etc.; bids to Arlington, Wash., May 2.

PIPE . . .

CAST IRON PIPE PLACED

521 tons, 4 to 10 in., King County District No. 49, to U. S. Pipe & Foundry Co., Seattle.

160 tons, 4 to 8 in., for Seattle, to U. S. Pipe & Foundry Co., Seattle.

89 tons, 12 in., for Alderwood Manor, Wash., to U. S. Pipe & Foundry Co., Seattle.

CAST IRON PIPE PENDING

377 tons, 12 in.; bids to Seattle, Apr. 27.

286 tons, 6 to 12 in.; bids in at Tacoma, Wash., Apr. 18.

111 tons, 4 to 10 in.; bids to Anchorage, Alaska, Apr. 28.

100 tons or more, 18 to 24 in.; bids to Chehalis, Wash., May 11.

Unstated, 8 and 10 in.; bids to Wenatchee, Wash., May 2.

RAILS, CARS . . .

RAILROAD CARS PLACED

Atlantic Coast Line, 1000 freight cars, to American Car & Foundry Div., ACF Industries Inc., New York. Greenville Steel Car Co., Greenville, Pa., and Pullman-Standard Div., Pullman Inc., Chicago. The list comprises 300 gondolas, 200 hopper cars, 200 wet rock cars, 200 wood chip cars, and 100 boxcars.

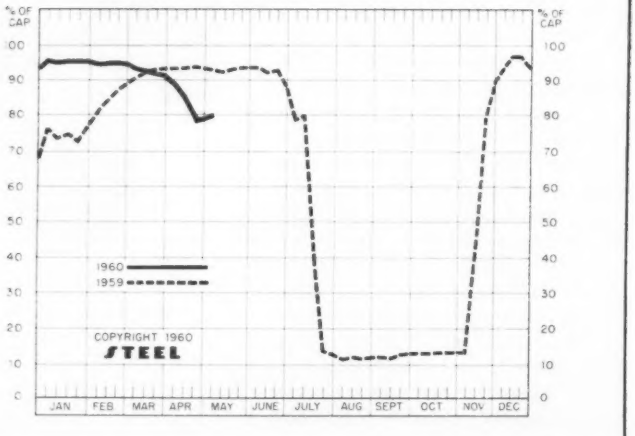
DISTRICT INGOT RATES

(Percentage of capacity utilized)

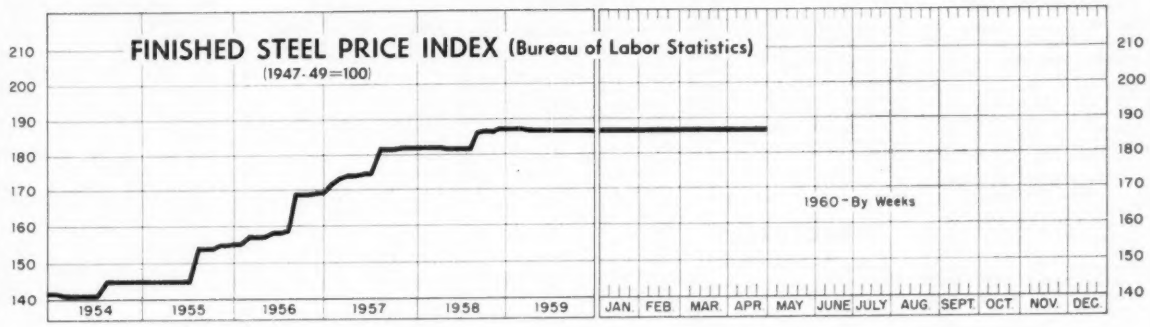
	Week Ended May 1	Week Ago	Month Ago	Year Ago
Northeastern	79	79	87	93
Buffalo	82	84	98	98
Pittsburgh	81	79	86	94
Youngstown	60	63	79	85
Cleveland	82	87	98	96
Detroit	94	83	103	97
Chicago	85	84	95	91
Cincinnati	90	92	101	92
St. Louis	86	84	101	108
Southern	79	79	84	92
Western	77	70	75	92
Total Industry	79.4	78.5	88.7	92.8
Index (1947-49=100)	140.8	139.3	157.3	163.5
Net Tons (In thousands)	2,261	2,238	2,527	2,627

Current week's figures are preliminary. Weekly capacity (net tons): 2,849,306 in 1960 and 2,831,331 in 1959. Source: American Iron & Steel Institute.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Apr. 26, 1960	Week Ago	Month Ago	Mar. Index	Year Ago
186.8	186.8	186.8	186.8	186.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Endede Apr. 26

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.765
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.658
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R. Alloy, High Speed, W18 Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.480
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.905
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.585
		Pipe, Line (100 ft)	199.533
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.900
Tubing, Mechanical, Carbon (100 ft)	27.005	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.665
Tin plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800	Nails, Wire, 8d Common	9.825
		Wire, Barbed(80-rod spool)	8.766
		Woven Wire Fence (20-rod roll)	21.880

STEEL's FINISHED PRICE INDEX*

	Apr. 27 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	247.82	194.53
Index in cents per lb	6.713	6.713	6.713	6.713	5.270

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$149.96	$118.45
No. 2 Fdry, Pig Iron, GT.	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	33.66	33.66	33.66	34.33	36.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Apr. 27 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.675	4.30
Bars, H.R., Chicago	5.675	5.675	5.675	5.675	4.30
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.975	4.55
Bars, C.R., Pittsburgh	7.65*	7.65*	7.65*	7.65*	5.40
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.50	4.25
Shapes, Std., Chicago	5.50	5.50	5.50	5.50	4.25
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.77	4.53
Plates, Pittsburgh	5.30	5.30	5.30	5.30	4.225
Plates, Chicago	5.30	5.30	5.30	5.30	4.225
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.30	4.225
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.30	4.225
Plates, Claymont, Del.	5.30	5.30	5.30	5.30	4.225
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.05
Sheets, H.R., Chicago	5.10	5.10	5.10	5.10	4.05
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.275	4.95
Sheets, C.R., Chicago	6.275	6.275	6.275	6.275	4.95
Sheets, C.R., Detroit	6.275	6.275	6.275	6.275	5.10
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.875	5.45
Strip, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.05
Strip, H.R., Chicago	5.10	5.10	5.10	5.10	4.05
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.425	5.75
Strip, C.R., Chicago	7.425	7.425	7.425	7.425	5.85
Strip, C.R., Detroit	7.425	7.425	7.425	7.425	5.90
Wire, Basic, Pittsburgh	8.00	8.00	8.00	8.00	5.75
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.85
Tin plate (1.50 lb)box,Pitts.	$10.65	$10.65	$10.65	$10.65	$9.05

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$99.50	$78.00
Wire rods, 7/32-5/8" Pitts.	6.40	6.40	6.40	6.40	4.675

PIG IRON, Gross Ton	Apr. 27 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pittsburgh	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Philadelphia	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	55.16
No. 2 Fdry, Birmingham	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.),deld.,Cin.	70.20	70.20	70.20	70.20	60.58
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net tons†	245.00	245.00	245.00	245.00	190.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$34.50	$34.50	$34.50	$36.50	$35.50
No. 1 Heavy Melt, E. Pa.	35.00	35.00	35.00	33.50	37.50
No. 1 Heavy Melt, Chicago	31.50	31.50	31.50	33.00	35.00
No. 1 Heavy Melt, Valley	36.50	36.50	36.50	35.50	35.50
No. 1 Heavy Melt, Cleve.	33.50	33.50	33.50	33.50	33.50
No. 1 Heavy Melt, Buffalo	30.50	30.50	31.50	32.50	32.50
Rails, Rerolling, Chicago	53.50	53.50	53.50	57.50	52.50
No. 1 Cast, Chicago	45.50	45.50	45.50	45.50	40.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.00	$13.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	32.00	25.25

Steel Prices

Mill prices as reported to STEEL, Apr. 27, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 107, footnotes, page 109.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)
Detroit S41 .....$82.00
Economy Pa. B14 .....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 .....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana Calif. K1 .....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B2 .....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5.....$99.50
Buffalo R2 .....99.50
Canton O. R2 .....102 00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3..101.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 .....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ....109 00
Gary,Ind. U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....101.50
Johnstown,Pa. B2.....99.50
Lackawanna,N.Y. B2...98.50
LosAngeles B3.....109.00
Midland Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3.....109 00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14 99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ....109.00
Warren,O. C17 .....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$119.00
Bridgeport,Conn. C32..119.00
Buffalo R2 .....119 00
Canton O R2 T7.....119 00
Conshohocken,Pa. A3..126.00
Detroit S41 .....119.00
Economy,Pa. B14 .....119 00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind Harbor,Ind. Y1...119 00
Johnstown Pa B2 .....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 .....119.00
Massillon O R2 .....119.00
Midland Pa. C18 .....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky G8 ....119.00
Sharon,Pa. S3 .....119 00
S Chicago R2,U5,W14 119 00
S.Duquesne,Pa. U5 ...119.00
Struthers O Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2.....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary Ind. U5 .....122 50
S.Chicago,Ill. R2, W14 122 50
S.Duquesne,Pa. U5....122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Benwood,W Va. W10....5.05
Ind.Harbor,Ind. Y1 ....5 05
Munhall Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2....6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6 60
Bartonville,Ill. K4 .....6 50
Buffalo W12 .....6 40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6 65
IndianaHarbor,Ind. Y1 ..6.40
Johnstown,Pa. B2 .....6.40
Joliet,Ill. A7 .....6.40
KansasCity,Mo. S5 .....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa Colo. C10 .....6.65
Monessen,Pa. P7 .....6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 .....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2...6.50
Sterling,Ill.(1) N15 .....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7.....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala, R2 ...5.50
Aliquippa,Pa. J5 .....5 50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5 50
Houston S5 .....5.60
Ind Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 .....5.60
Lackawanna,N.Y. B2....5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 .....6 25
Seattle B3 .....6.25
S.Chicago Ill. U5, W14..5.50
S.SanFrancisco R3 .....6.15
Sterling,Ill N15 .....5.50
Torrance,Calif. C11 .....6.20
Weirton,W.Va. W6 .....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ....5 55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 .....5.55
S.Chicago Ill. U5 .....5.50
Sterling,Ill. N15 .....5.50
Weirton,W.Va. W6 .....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2.....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo S5 .....8.15
Lackawanna,N.Y. B2....8.10
LosAngeles B3 .....8.75
Munhall Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago Ill. U5, W14..8.05
S.SanFrancisco B3 .....8.70
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....8.05

H.S., L.A., Wide Flange
Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ...8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05
Sterling,Ill. N15 .....7.75

PILING

BEARING PILES
Bethlehem Pa. B2 .....5.55
Ind Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ....5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ...5.50

STEEL SHEET PILING
Ind.Harbor Ind I-2 .....6.50
Lackawanna,N.Y. B2....6.50
Munhall,Pa. U5 .....6.50
S Chicago,Ill. I-2, U5....6.50
Weirton,W.Va. W6 .....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2....5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky.(15) A10....5.30
Atlanta A11 .....5.50
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont Del. C22 .....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 .....5.30
Conshohocken,Pa. A3 ...5.30
Ecorse,Mich G5 .....5.30
Fairfield Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1...6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 .....5.40
Harrisburg Pa. P4 .....5.30
Houston S5 .....5.40
Ind Harbor,Ind I-2, Y1.5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2....5.30
Mansfield O E6 .....5.30
Minnequa,Colo C10 .....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1.....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago Ill. U5, W14...5.30
SparrowsPoint Md. B2...5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10.....5.30
Warren O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5 30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa B2 .....7.05
SparrowsPoint,Md. B2...7.05

PLATES, Wrought Iron
Economy,Pa. B14 .....14.10

PLATES, H.S., L.A.
Aliquippa,Pa. J5.....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton Pa. U5 .....7.95
Claymont,Del C22 .....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 .....7.95
Conshohocken,Pa. A3 ...7.95
Economy,Pa. B14.....7.95
Ecorse,Mich. G5 .....7.95
Fairfield Ala. T2 .....7.95
Farrell Pa. S3 .....7.95
Fontana,Calif.(30) K1...8.75
Gary,Ind. U5 .....7.95
Geneva Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y-1.7.95
Johnstown,Pa B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon,Pa. S3 .....7.95
S.Chicago,Ill U5, W14..7.95
SparrowsPoint,Md. B2...7.95
Warren,O R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy
Aliquippa Pa. J5 .....7.50
Claymont,Del. C22 .....7.50
Coatesville,Pa. L7 .....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S Chicago Ill U5, W14..7.50
SparrowsPoint,Md. B2...7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Conshohocken,Pa. A3...6.375
Ind Harbor Ind I-2 ....6 375
Munhall,Pa. U5 .....6 375
Pittsburgh J5.....6 375
S.Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron
Ashland c.l. (15) A10...5.55
Ashland l.c.l. (15) A10..6 05
Cleveland c.l. R2 .....6 05
Warren,O. R2 .....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2....5.675
Aliquippa,Pa. (9) J5...5.675
Alton Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ...5.675
Birmingham(9) C15 ....5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich (9) G5 ....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ...5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1...6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1..5.675
Johnstown,Pa.(9) B2...5.675
Joliet,Ill. P2 .....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 .....5.675
LosAngeles(9) B3 .....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18....6.025
Milton Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
Owensboro,Ky.(9) G8..6 025
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 .....5.675
Portland Oreg. O4 .....6.425
Riverdale,Ill.(9) A1 ....5.675
Seattle(9) A24, B3, N15..6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne Pa.(9) U5..5.675
S.SanFran .Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 .....5.675
Tonawanda N.Y. B12...5.675
Torrance Calif.(9) C11..6.375
Warren,O. C17 .....6.025
Youngstown(9) R2,U5..5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2.....6.725
Bridgeport,Conn. C32 ...6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 .....6.725
Clairton,Pa. U5 .....6.725
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 .....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1 6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2...6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5 W14..6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5.....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem Pa. B2 .....8.30
Clairton Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 .....8.30
Johnstown,Pa. B2.....8.30
KansasCity,Mo. S5 .....8.55
Lackawanna,N.Y. B2 ...8.30
LosAngeles B3 .....9 00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S Chicago,Ill. R2 W14..8.30
S Duquesne Pa. U5 .....8.30
S.SanFrancisco B3 .....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa. (9) B2..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5 925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5 775
Sterling,Ill.(1) N15 ....5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....5 675
Portland,Oreg. O4 .....6.425
SanFrancisco B7 .....6.52
Seattle B3 .....6.425

BAR SIZE ANGLES; S. SHAPES Wrought Iron
Economy,Pa. B14 ....16.45

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton Pa. U5 .....6 80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5.....7 05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra) Carbon
LosAngeles P2, S30....11.75*
Alloy
Ambridge,Pa. W18....10.175
BeaverFalls,Pa. M12..10.175
Camden N.J. P13 .....10 35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 .....10 175
Newark,N.J. W18 .....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge Pa. W18 .....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 .....8 25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7 65
Cleveland A7 C20 .....7 65
Detroit B5, P17 .....7.85
Detroit S41 .....7 65
Donora,Pa. A7 .....7 65
Elyria,O. W8 .....7 65
FranklinPark,Ill. N5 ...7 65
Gary Ind. R2 .....7.65
GreenBay,Wis F7 .....7 65
Hammond,Ind. J5, L2..7 65
Hartford,Conn. R2 .....8.15
Harvey, Ill. B5 .....7.65
LosAngeles (49) S30....9 10
LosAngeles(49) P2 R2..9.10
Mansfield,Mass. B5 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7 65
Monaca,Pa. S17 .....7 85
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4...7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 .....7.90
Putnam,Conn. W18 .....8.20
Readville,Mass. C14 ....8.20
S.Chicago Ill. W14.....7 65
SpringCity,Pa. K3 .....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic Conn. J5 ...8.15
Youngstown F3 Y1 .....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 .6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....9.025
BeaverFalls Pa.M12,R2 9.025
Bethlehem Pa. B2 .....9.025
Bridgeport,Conn. C32...9 175
Buffalo B5 .....9.025
Camden,N.J P13 .....9 20
Canton,O. T7 .....9 025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 .....9.025
Detroit B5, P17 .....9.225
Detroit S41 .....9.025
Donora,Pa. A7 .....9 025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5...9.025
Gary,Ind. R2 .....9.025
GreenBay Wis. F7 .....9.025
Hammond,Ind. J5, L2..9 025
Hartford,Conn. R2 ....9 325
Harvey,Ill. B5 .....9.025
Lackawanna,N.Y. B2...9 025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ...9.325
Massillon,O. R2, R8....9 025
Midland,Pa. C18 .....9 026
Monaca Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9 025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025

Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ...9.325
Youngstown F3, Y1 ...9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5 675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6 375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5 925
Ind.Harbor,Ind. I-2,Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity Mo. S5 ....5.925
Kokomo,Ind. C16 ....5 775
Lackawanna,N.Y. B2...5.675
LosAngeles B3 .....6 375
Madison,Ill. L1 .....5 875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ...6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle A24, B3 N14..6.425
S.Chicago,Ill R2, W14.5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ....5.675
Sterling,Ill. N15 .....5 775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ..6 10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ...5.675

BARS, Reinforcing, Billet (Fabricated: To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7 33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ...7 35
Marion,O. P11 .....6 70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7 63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ..7.60
Seattle A24, B3 N14 ...7.95
SparrowsPt.,Md. B2 ....7.33
St.Paul U8 .....8 17
Williamsport, Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 15.10
Economy,Pa.(D.R.)B14 19.30
Econ.(DirectRolled)B14 13.55
Economy(staybolt)B14 .19.80
McK.Rks.(S.R.) L5 ....14.50
McK.Rks.(D.R.) L5 ...19 80
McK.Rks.(Staybolt)L5, 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2.5.575
ChicagoHts.(4)(44) I-2.5.675
ChicagoHts.(4) C2 ....5 675
Franklin Pa.(3) F5 ...5.675
Franklin,Pa.(4) F5 ...5.675
JerseyShore Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 .....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ....5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless Pa. U5 .....5.15
Farrell Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ...5 20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago Ill. U5, W14 ..5.10
SparrowsPoint Md. B2 ..5.10
Steubenville O. W10 ....5.10
Warren O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7 525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7 525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ....7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Aliquippa,Pa. J5 .....6.275
Allenport,Pa. P7 .....6.275
Cleveland J5, R2 .....6 275
Conshohocken,Pa. A3 ..6 325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6 275
Fairfield Ala. T2 .....6.275
Fairless Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6 275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield O E6 .....6 275
Middletown O. A10 ....6.275
Newport Ky. A2 .....6.275
Pittsburg Calif. C11 ...7.225
Pittsburgh J5 .....6 275
Portsmouth,O. P12 ....6 275
SparrowsPoint,Md B2..6 275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6 275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 ....9.275
Ecorse,Mich. G5 .....9.275
Fairless Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(38) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(33) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O R2	7.225	....
Fairfield Ala. T2	7.225	7.475
Gary Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2..6.875‡
Ashland,Ky. A10 ...6.875‡
Canton,O. R2 .....6 875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary Ind. U5 .....6 875†
GraniteCity,Ill. G4 ...6 975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6 975‡
MartinsFerry,O. W10..6.875*
Middletown,O A10 ..6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ..6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10 125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ...7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.50
Youngstown J5 .....7.50

SHEETS, Wall Casing

Fontana,Calif. K1 ....7.325

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9 625
Irvin,Pa. U5 (type 1) ..9.525

SHEETS, Enameling

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield Ala. T2 .....6 775
Gary,Ind. U5 .....6.775
Ind.Harbor,Ind. I-2, Y1 6 775
Irvin,Pa. U5 .....6 775
Middletown,O. A10 ....6 775
Niles,O. M21, S3 .....6.775
SparrowsPoint,Md. B2..6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Ind.Harbor Ind. I-2 .....8.70
Mansfield O. E6 .....8 70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7 225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox
B2 Bethlehem Steel Co.
B3 Bethlehem Steel Co., Pacific Coast Div.
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co., Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div. Merritt-Chapmann&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 NorthwesternS.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Div., Bliss & Laughlin Inc.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J & L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America

T2 Tenn. Coal & Iron
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City, Ala. (27) R2	5.10
Allenport, Pa. P7	5.10
Alton, Ill. L1	5.30
Ashland, Ky. (8) A10	5.10
Atlanta A11	5.10
Bessemer, Ala. T2	5.10
Birmingham C15	5.10
Conshohocken, Pa. A3	5.15
Detroit M1	5.10
Ecorse, Mich. G5	5.10
Fairfield, Ala. T2	5.10
Farrell, Pa. S3	5.10
Fontana, Calif. K1	5.825
Gary, Ind. U5	5.10
Ind. Harbor, Ind. I-2, Y1	5.10
Johnstown, Pa. (25) B2	5.10
Lackaw'na, N.Y. (25) B2	5.10
LosAngeles (25) B3	5.85
LosAngeles C1	8.60
Minnequa, Colo. C10	6.20
Riverdale, Ill. A1	5.10
SanFrancisco S7	6.60
Seattle (25) B3	6.10
Seattle N14	6.60
Sharon, Pa. S3	5.10
S.Chicago, Ill. W14	5.10
S.SanFrancisco (25) B3	5.85
SparrowsPoint, Md. B2	5.10
Torrance, Calif. C11	5.85
Warren, O. R2	5.10
Weirton, W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.40
Farrell, Pa. S3	8.40
Gary, Ind. U5	8.40
Houston S5	8.65
Ind. Harbor, Ind. Y1	8.40
KansasCity, Mo. S5	8.65
LosAngeles B3	9.60
Lowellville, O. S3	8.40
Newport, Ky. A2	8.40
Sharon, Pa. A2, S3	8.40
S.Chicago, Ill. W14	8.40
Youngstown U5, Y1	8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland, Ky. A10	7.575
Bessemer, Ala. T2	7.575
Conshohocken, Pa. A3	7.575
Ecorse, Mich. G5	7.575
Fairfield, Ala. T2	7.575
Farrell, Pa. S3	7.575
Gary, Ind. U5	7.575
Ind. Harbor, Ind. I-2, Y1	7.575
Lackawanna, N.Y. B2	7.575
LosAngeles (25) B3	8.325
Seattle (25) B3	8.575
Sharon, Pa. S3	7.575
S.Chicago, Ill. W14	7.575
S.SanFrancisco (25) B3	8.325
SparrowsPoint, Md. B2	7.575
Warren, O. R2	7.575
Weirton, W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.35
Warren, O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn, Mich. S3	7.425
Detroit D2, M1, P20	7.425
Dover, O. G6	7.425
Evanston, Ill. M22	7.525
Farrell, Pa. S3	7.425
Follansbee, W.Va. W10	7.425
Fontana, Calif. K1	9.20
FranklinPark, Ill. T6	7.525
Ind. Harbor, Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles C1, S41	9.30
McKeesport, Pa. E10	7.525
NewBedford, Mass. R10	7.875
NewBritain, Conn. S15	7.875
NewCastle, Pa. B4, E5	7.425
NewHaven, Conn. D2	7.875
NewKensington, Pa. A6	7.425
Pawtucket, R.I. R3, N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale, Ill. A1	7.525
Rome, N.Y. (32) R6	7.425
Sharon, Pa. S3	7.425
Trenton, N.J. (31) R5	8.875
Warren, O. R2, T5	7.425
Worcester, Mass. A7	7.975

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie, Pa. S18	15.55
Cleveland A7	15.55
Dover, O. G6	15.55
Farrell, Pa. S3	15.55
FranklinPark, Ill. T6	15.55
Harrison, N.J. S18	15.55
Indianapolis S41	15.70
LosAngeles S41	17.75
Lowellville, O. S3	15.55
Pawtucket, R.I. N8	15.90
Riverdale, Ill. A1	15.55
Sharon, Pa. S3	15.55
Worcester, Mass. A7	15.85
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn, Mich. S3	10.80
Dover, O. G6	10.80
Farrell, Pa. S3	10.80
Ind. Harbor, Ind. Y1	10.80
Sharon, Pa. S3	10.80
Warren, O. R2	10.80
Weirton, W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	....	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	15.60	....
Farrell, Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria, O. S1	10.05	10.40	12.60	15.60	....
FranklinPark, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain, Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle, Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven, Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington, Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	....	10.70	12.90	15.90	18.85
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	0.80C	1.05C	1.35C
Bristol, Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria, O. S1	19.05	22.15	....
FranklinPark, Ill. T6	19.20	23.30	28.15
Harrison, N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer, Mass. W12	18.85	....	....
Trenton, N.J. R5	18.85	22.95	27.80
Worcester, Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	8.175

STRIP, C.R., Electrogalvanized

Cleveland A7	7.425*
Dover, O. G6	7.425*
Evanston, Ill. M22	7.525*
McKeesport, Pa. E10	7.50*
Riverdale, Ill. A1	7.525*
Warren, O. B9, S3, T5	7.425*
Worcester, Mass. A7	7.975
Youngstown S41, Y1	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell, Pa. S3	7.50
Sharon, Pa. S3	7.56

TIGHT COOPERAGE HOOP

Atlanta A11	5.825
Farrell, Pa. S3	5.525
Riverdale, Ill. A1	5.675
Sharon, Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa, Pa. J5	$9.10	$9.35	$9.75
Fairfield, Ala. T2	9.20	9.45	9.85
Fairless, Pa. U5	9.20	9.45	9.85
Fontana, Calif. K1	9.75	10.00	10.40
Gary, Ind. U5	9.10	9.35	9.75
GraniteCity, Ill. G4	9.20	9.45	9.60
IndianaHarbor, Ind. I-2, Y1	9.10	9.35	9.75
Irvin, Pa. U5	9.10	9.35	9.75
Niles, O. R2	9.10	9.35	9.75
Pittsburg, Calif. C11	9.75	10.00	10.40
SparrowsPoint, Md. B2	9.10	9.35	9.75
Weirton, W.Va. W6	9.10	9.35	9.75
Yorkville, O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)

Aliquippa, Pa. J5 (21-27 Ga.)	7.90	8.10	....
IndianaHarbor, Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles, O. R2 (20-27 Ga.)	7.90	8.10	8.30

TIN PLATE, Hot Dipped Common Coke	1.25 lb	1.50 lb
Aliquippa, Pa. J5	$10.40	$10.65
Fairfield, Ala. T2	10.50	10.75
Fontana, Calif. K1	11.05	11.30
Gary, Ind. U5	10.40	10.65
Ind. Harb. Y1	10.40	10.65
Irvin, Pa. U5	10.40	10.65
Pitts., Calif. C11	11.05	11.30
Sp. Pt., Md. B2	10.40	10.65
Weirton, W.Va. W6	10.40	10.65
Yorkville, O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa, Pa. J5	$8.20
Fairfield, Ala. T2	8.30
Fairless, Pa. U5	8.30
Fontana, Calif. K1	8.85
Gary, Ind. U5	8.20
GraniteCity, G4	8.30
Ind. Harbor, Ind. I-2, Y1	8.20
Irvin, Pa. U5	8.20
Niles, O. R2	8.20
Pittsburg, Calif. C11	8.85
SparrowsPoint, Md. B2	8.20
Weirton, W.Va. W6	8.20
Yorkville, O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa, Pa. J5	7.85
Gary, Ind. U5	7.85
GraniteCity, Ill. G4	7.95
Ind. Harbor, Ind. Y1	7.85
Irvin, Pa. U5	7.85
Yorkville, O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary, Ind. U5	$10.05
Irvin, Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge, Pa. A4	....	....	12.40	13.55	14.65
GraniteCity, Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor, Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield, O. E6	9.875*	11.70	12.40	13.55	14.65
Newport, Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles, O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift, Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren, O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville, O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift, Pa. U5	8.10
Mansfield, O. E6	8.10
Warren, O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom, W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift, Pa. U5	15.70	16.30	16.80	17.85
Zanesville, O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler, Pa. A10	....	....	....	19.70	20.20	20.70	....
Vandergrift, Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren, O. R2	....	....	....	....	....	....	15.70‡

*Semiprocessed, †Fully processed only. ‡Coils, annealed; semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity, Ala R2	8.00
Aliquippa, Pa. J5	8.00
Alton, Ill. L1	8.20
Atlanta A1	8.00
Bartonville, Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville, Ind. M8	8.10
Donora, Pa. A7	8.00
Duluth A7	8.00
Fairfield, Ala. T2	8.00
Fostoria, O. (24) S1	8.10
Houston S5	8.25
Jacksonville, Fla. M8	8.35
Johnstown, Pa. B2	8.00
Joliet, Ill. A7	8.00
KansasCity, Mo. S5	8.25
Kokomo, Ind. C16	8.10
LosAngeles B3	8.95
Minnequa, Colo. C10	8.25
Monessen, Pa. P7, P16	8.00
Palmer, Mass. W12	8.30
Pittsburg, Calif. C11	8.95
Portsmouth, O. P12	8.00
Rankin, Pa. A7	8.00
S.Chicago, Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPointMd. B2	8.10
Sterling, Ill. (1) N15	8.00
Sterling, Ill. N15	8.10
Struthers, O. Y1	8.00
Waukegan, Ill. A7	8.00
Worcester, Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria, O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville, Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora, Pa. A7	12.65
Duluth A7	12.65
Johnstown, Pa. B2	13.40
KansasCity, Mo. U3	12.90
Minnequa, Colo. C10	12.775
Monessen, Pa. P7, P16	12.65
Muncie, Ind. I-7	13.60
NewHaven, Conn. A7	12.95
Palmer, Mass. W12	13.70
Pittsburg, Calif. C11	13.45
Portsmouth, O. P12	12.65
Roebling, N.J. R5	12.95
SparrowsPt., Md. B2	13.50
Struthers, O. Y1	13.40
Trenton, N.J. A7	12.95
Waukegan, Ill. A7	12.65
Worcester, Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa, Pa. J5	9.75
Alton, Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora, Pa. A7	9.75
Duluth A7	9.75
Johnstown, Pa. B2	9.75
KansasCity, Mo. S5, U3	10.00
Kokomo, Ind. C16	9.85
LosAngeles B3	10.70
Minnequa, Colo. C10	9.95
Monessen, Pa. P7, P16	9.75
NewHaven, Conn. A7	10.05
Palmer, Mass. W12	10.05
Pittsburg, Calif. C11	10.70
Portsmouth, O. P12	9.75
Roebling, N.J. R5	10.05
S.Chicago, Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt., Md. B2	9.85
Struthers, O. Y1	9.75
Trenton, N.J. A7	10.05
Waukegan, Ill. A7	9.75
Worcester, Mass. A7, J4, T6	10.05

WIRE, Fine & Weaving (8" Coils)

Alton, Ill. L1	16.50
Bartonville, Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville, Ind. M8	16.40
Fostoria, O. S1	16.30
Houston S5	16.55
Jacksonville, Fla. M8	16.85
Johnstown, Pa. B2	16.30
KansasCity, Mo. S5	16.55
Kokomo, Ind. C16	16.30
Minnequa, Colo. C16	16.55
Monessen, Pa. P16	16.30
Muncie, Ind. I-7	16.50
Palmer, Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan, Ill. A7	16.30
Worcester, Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville, Ill. K4	17.15
Monessen, Pa. P16	17.15
Roebling, N.J. R5	17.65

ROPE WIRE (A)

Bartonville, Ill. K4	13.45
Buffalo W12	13.45
Fostoria, O. S1	13.45
KansasCity, Mo. U3	13.70
Johnstown, Pa. B2	13.45
Monessen, Pa. P7	13.45
Muncie, Ind. I-7	13.65
Palmer, Mass. W12	13.75
Portsmouth, O. P12	13.45
Roebling, N.J. R5	13.75
St. Louis L8	13.45
SparrowsPt., Md. B2	13.55
Struthers, O. Y1	13.45
Worcester, Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	12.65
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock — **Col.**

AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7	$10.30

NAILS, Cut (100 lb kegs)

Wheeling,W.Va. W10	$10.10

POLISHED STAPLES — **Col.**

AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	178
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$8.78
Atlanta A11	10.36
Bartonville,Ill. K4	8.88
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	8.88
Donora,Pa. A7	8.78
Duluth A7	8.78
Fairfield,Ala. T2	8.78
Houston S5	10.51
Jacksonville,Fla. M8	8.88
Johnstown,Pa. B2	8.78
Joliet,Ill. A7	8.78
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	8.88
LosAngeles B3	9.44
Minnequa,Colo. C10	9.49
Pittsburg,Calif. C11	9.44
S.Chicago,Ill. R2	8.78
S.SanFrancisco C10	9.94
SparrowsPt.,Md. B2	8.88
Sterling,Ill.(37) N15	8.88

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.06
Atlanta A11	10.70
Bartonville,Ill. K4	9.16
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville Ind. M8	9.16
Donora,Pa. A7	9.06
Duluth A7	9.06
Fairfield,Ala. T2	9.06
Houston S5	10.85
Jacksonville,Fla. M8	9.16
Johnstown,Pa. B2	9.06
Joliet,Ill. A7	9.06
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.16
LosAngeles B3	9.75
Minnequa,Colo. C10	9.79
Pittsburg,Calif. G6	9.75
S.Chicago,Ill. R2	9.06
S.SanFrancisco C10	10.26
SparrowsPt.,Md. B2	9.16
Sterling,Ill.(37) N15	9.16

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.11
Atlanta A11	10.75
Bartonville,Ill. K4	9.21
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.21
Donora,Pa. A7	9.11
Duluth A7	9.11
Fairfield,Ala. T2	9.11
Houston S5	10.90
Jacksonville,Fla. M8	9.21
Johnstown,Pa. B2	9.11
Joliet,Ill. A7	9.11
KansasCity,Mo. S5	10.96
Kokomo,Ind. C16	9.21
LosAngeles B3	9.80
Minnequa,Colo. C10	9.84
Pittsburg,Calif. C11	9.80
S.Chicago,Ill. R2	9.11
S.SanFrancisco C10	10.31
SparrowsPt.,Md. B2	9.21
Sterling,Ill.(37) N15	9.21

BALE TIES, Single Loop — **Col.**

AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS — **Col.**

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed — **Col.**

AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	199
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198

WOVEN FENCE, 9-15 Ga. — **Col**

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga. J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	193
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192

WIRE (16 gage)	**An'ld Stone**	**Galv. Stone**
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	18.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.95	19.50†
Minnequa C10	18.10	19.65**
P'im'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18 20	19.75†
S.SanFran. C10	18.20	19.75**
St'ling(37) N15	17.95	19 80
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage)

	An'ld Galv.	
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.325§
Atlanta(48)A11	9.10	9.775§
Bartonville(48) K4	9.85	19.90
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	9.10	9.80††
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jack'ville,Fla. M8	9.10	9.80†‡
Johnstown(48) B2	9.00	9.675§
Joliet,Ill. A7	9.00	9.55†
KansasCity(48)S5	9.25	9.80**
Kokomo(48) S16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Minnequa C10	9.25	9.80**
Monessen(48) P7	8.65	9.35§
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.(48)B2	9.10	9.775§
St'ling(37)(48)N15	9.10	9.80
Struthers,O. Y1	9.00	9.65‡
Worcester,Mass.A7	9.30	9.85†

Based on zinc prices of: *13.50c. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras.

FASTENERS

(Consumer discounts, per cent off list prices, orders for 1 container for assorted sizes; for less than container quantities, add 25 per cent; attaching nuts to bolts, package sizes, add 7.5 per cent; heavy hex nut 1⅛ in. through 1½ in. tapped 8 threads, add 10 per cent)

HEX HEAD CAP SCREWS, coarse or fine thread, packaged or bulk, with or without hex nuts, 1020 steel bright and high carbon heat treated, ¼ in. thru 1 in. diam., listed lengths:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
Bulk	50

BOLTS, Standard stock sizes:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
*Bulk	50

*Hot galvanized or zinc plated lag bolts only—for package or bulk quantities use applicable list less bulk discounts.

HEXAGON NUTS, American Standard: Finished hex, hex jam, and hex slotted coarse or fine thread, ¼ in. through 3 in., finished hex thick, thick and slotted, castle, fine thread, ¼ in. through 1½ in., semifinished hex heavy, heavy and jam, heavy and slotted, coarse thread, ¼ in. through 4 in., and

SQUARE NUTS, American Standard: Regular square and heavy square, coarse thread, ¼ in. through 2 in.:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packages	43.75
Bulk	50

CAP AND SETSCREWS,

Fillister Head, Cap Screws, Coarse Thread:

Packages	+55
Bulk	+16

Flat Head Cap Screws:

¾ in. and smaller, 6 in. and shorter:	
Packages	+85
Bulk	+38

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam, 6 in. and shorter:	
Packages	+ 5
Bulk	+19
Through 1 in. diam., longer than 6 in.:	
Packages	+29

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.85

⅞ in. and smaller by 6 in. and shorter: 15% off list.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$28.95	$43.40	$55.40	$73.00	$95.10
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	28.95	43.40	55.40	73.00	....
KansasCity,Mo. U3	29.85	43.00	55.40	73.00	95.10
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	28.95	43.40	55.40	73.00	95.10
Pittsburg,Calif. C11	28.95	43.40	55.40	73.00	95.10
M'nnequa,Colo. C10	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
SparrowsPoint,Md. B2	28.95	43.40	55.40	73.00	95.10
St.Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	28.95	43.40	55.40	73.00	95.10

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2¼	12	49.24	57.72	43.70
2½	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.60	....	6.725
Emley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....	(16)6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	15.35
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	10.10
Ind.Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in; 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(12) Worcester, Mass., base.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) 14 Ga., 48 in.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds, 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	2.5	+26	+10.5	+36	+21.5	+46	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.75	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on price of zinc at 13.00c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.25	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.00	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Josiyn Stainless Steels, division of Josiyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co., Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.55	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	$36.80	$44.20

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7; New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	V-Cr Hot Work (H-13)	0.550
Spec. Carbon (W-1)	0.385	W-Cr Hot Work (H-12)	0.530
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward, Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....
Syracuse, N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S. Chicago R2	66.00	66.50	66.50	67.00
S. Chicago, Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon, Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron, Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester, Pa. P4	Nom.	Nom.	Nom.	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark, N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island, Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	....	68.26	68.26	69.79
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63
Midland, Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard, Ohio Y1	....	....	66.50	....
Sharpsville, Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield, Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie, Pa. I-3	66.00	66.50	66.50	67.00
Everett, Mass. E1	67.50	68.00	68.50	....
Fontana, Calif. K1	75.00	75.50	....	....
Geneva, Utah C11	66.00	66.50	....	....
Granite City, Ill. G4	67.90	68.40	68.90	....
Ironton, Utah C11	66.00	66.50	....	....
Minnequa, Colo. C10	66.00	66.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson, Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Calvert City, Ky. P15	$99.00
Niagara Falls, N.Y. P15	99.00
Keokuk, Iowa Open-hearth & Fdry. K2	89.00
Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Birdsboro, Pa. B10 (Phos. 0.075% max)	$73.00
Lyles, Tenn. T3 (Phos. 0.035% max)	78.00
Rockwood, Tenn. T3 (Phos. 0.035% max)	73.00
Buffalo H1 (Intermediate) (0.036-0.075% max)	71.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Swedeland, Pa. A3 (Intermediate) (Phos. 0.036-0.075% max)	73.00
Troy, N.Y. R2 (Phos. 0.075% max)	73.00

Steel Service Center Products

Representative prices, cents per pound, f.o.b. warehouse, for 2000 lb items (except stainless) ordered by themselves. Prices will vary with total weight of the order or weight of the individual items or both. Base quantities for stainless sheets: 8000 lb, except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			STRUCTURAL	PLATES	
	Hot Rolled	Cold Rolled	Galv.	Stainless Type 302	Hot Rolled	H.R. Rounds	C.F. Rounds	H.R. Alloy 4140	SHAPES	Carbon	Floor
Atlanta	9.37	10.61	11.83	....	10.85	9.53	13.24	....	9.94	9.73	11.16
Baltimore	8.53	8.66	10.06	....	10.94	9.33	11.80	16.38	9.92	9.15	10.50
Birmingham	9.43	10.20	10.46	....	10.41	9.09	13.14	16.76	9.00	9.29	10.90
Boston	9.67	10.53	11.77	53.50	12.16	9.77	13.35	16.59	10.16	9.62	11.08
Buffalo	8.80	9.95	11.15	55.98	10.65	9.00	11.45	16.30	9.65	9.00	10.85
Charlotte, N. C.	10.81	11.22	11.34	....	12.29	10.97	12.68	....	11.38	11.17	12.18
Chicago	8.74	10.20	10.95	53.00	10.40	8.84	10.65	15.95	9.33	8.67	10.46
Cincinnati	8.91	10.26	11.00	53.43	10.72	9.16	11.53	16.27	9.89	9.05	10.79
Cleveland	8.73	9.88	11.14	52.33	10.51	8.96	11.25	16.06	9.75	8.92	10.56
Dallas	9.47	10.30	12.59	....	11.03	8.88	12.98	16.95	9.11	9.20	10.87
Detroit	9.00	10.46	11.30	56.50	10.77	9.15	11.01	16.23	9.89	9.04	10.72
Denver	9.41	11.77	12.11	....	9.56	10.10	11.47	....	10.02	9.69	11.83
Houston	9.12	9.93	12.19	52.00	10.68	8.53	13.10	16.55	8.76	8.85	10.52
Indianapolis	9.18	10.64	11.39	....	10.84	9.28	11.09	16.39	9.77	9.11	10.90
Kansas City	9.21	10.87	11.35	....	10.87	9.31	11.57	15.72	9.80	9.10	....
Los Angeles	9.95	11.55	12.20	57.60	11.55	9.75	14.20	17.35	10.00	10.00	11.85
Milwaukee	8.88	10.34	11.09	....	10.54	8.98	10.89	16.09	9.55	8.81	10.60
New York	9.36	10.13	11.35	53.08	11.46	9.74	13.25	16.40	10.20	9.51	11.05
Philadelphia	9.10	10.00	10.89	52.17	11.10	9.50	11.95	16.38	9.85	9.55	10.55
Pittsburgh	8.73	9.88	11.03	52.33	10.49	8.85	11.25	15.95	9.36	8.68	10.32
St. Louis	8.54	10.58	11.33	....	10.50	8.95	11.28	16.33	9.45	8.78	10.57
St. Paul	9.00	9.59	10.74	....	10.66	9.12	11.49	16.54	9.63	8.95	10.49
San Francisco	10.90	11.85	11.55	55.10	12.15	10.65	15.10	17.25	10.85	10.90	12.90
Seattle	11.55	12.30	12.50	56.52	12.65	11.10	16.20	17.80	11.20	11.00	13.10
Spokane, Wash.	11.55	12.30	12.50	57.38	13.15	11.60	16.20	17.80	11.20	11.00	13.60

Specifications: Hot rolled sheet, sheared edge, 10 Ga. & 36 x 96-120 in.; cold rolled sheets, 20 Ga. x 36 x 96-120 in.; galvanized sheets, 10 Ga. x 36 x 120 in. except Dallas and Houston, 10 Ga. x 48 x 120 in.; hot rolled strip, ⅛ in. x 1 in.; hot rolled carbon bars, ¾ in.—2½ in., M1020; cold finished bars, 1 in., C1018; hot rolled alloy bars, 4140 annealed, 1⅝ in.—2⅞ in. rounds; structural shapes, I beams, 6 x 12½ in.; carbon plates, ¼ in. x 84 in.; floor plates, ¼ in. x 36 in.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif., $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry-Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Ressdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martins Ferry, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.00.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

*—0 in. x 4½ x 2.50 straights.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $28-$28.50; barge, Brownsville, Tex., $30-$31.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00†
Brazilian iron ore, 68.5%	21.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$19.00-19.50
Domestic, concentrates, f.o.b. milling points	22.00-23.00

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian, 88-90c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$34.00-35.00†
48% no ratio	25.00-26.00†

South African Transvaal

44% no ratio	18.00†
48% no ratio	24.00-26.00†

Turkish

48% 3:1	36.00-37.00†

Domestic

Rail nearest seller

18% 3:1	30.00

Molybdenum

Sulfide concentrate, per lb of Mo contents, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
55-60%	$2.50-2.75
60-65%	2.80-3.20

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Canadian Steel

(Cents per pound, f.o.b. mill, except as otherwise noted)

Billets, Blooms & Slabs:	
Carbon, Forging Quality (net ton)	$97.00
Alloy (net ton)	115.00
Wire Rods:	
Carbon, $\frac{7}{32}$" to under ¼ in.	5.30
Carbon, ¼ in. to 47/64 in.	5.70
Alloy	6.40
Wire (carload lots)	8.40
Bars & Small Shapes:	
Carbon, merchant quality	5.40
Carbon, special quality	5.85
Alloy	6.40
Bar Mill Bands:	
Carbon	5.40
Alloy	8.05
Structural Size Angles & Zees	5.40
Plates:	
Carbon	5.45
Sheets & Coils, Hot Rolled:	
Carbon Sheets	5.00
Carbon Strip	5.00
Sheets & Coils, Cold Rolled:	
Carbon Sheets	6.35
Carbon Strip (0.080 and lighter)	6.35
Carbon Strip (0.081 and heavier)	6.65
Sheets & Coils, Galvanized:	
Standard Quality	6.70
Culvert Quality	7.00
Sheets, Porcelain Enameling	7.45
Sheets & Coils, Electrical:	
Field Grade	9.00
Armature Grade	9.50
Electrical Grade	10.15
Tin Mill Products (Per Base Box; 100 lb base wt)	
Coke Tin Plate (1.25 lb pot yield)	$10.60
Electrolytic Tin Plate (0.25 lb coating)	9.10
Black Plate	8.30
Nails, c.l. lots, 400 keg min. (per keg)	$8.15

Metal Powder

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe, min. truckiots, freight allowed east of Mississippi River:	
100 mesh, bags	11.50
100 mesh, pails, 00	9.85‡
40 mesh, bags	8.10††
Electrolytic Iron, Melting stock, 99.87% Fe, irreg. fragments, ⅛ in. x 1.3 in.	28.75
(In contract lots of 750 tons price is 22.75c)	
Annealed, 99.5% Fe, 36.75, ton, del. east of Mississippi.	
Unannealed (99+% Fe) f.o.b.	33.0
Unannealed (99+% Fe) (minus 325 mesh) f.o.b.	58.0
Carbonyl Iron: 98.1-98.9%, 2 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum freight allowed, c.l. 38.50; ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	35.10-52.20†
Bronze, 500-lb lots	53.10-56.70†
Copper, electrolytic	14.25*
Copper, reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 35 mesh	$1.00
Nickel	$1.15
Nickel-Silver, 5000-lb lots	60.70-69.00†
Phosphor-Copper, 5000-lb lots	66.00
Copper (atomized) 5000-lb lots	46.50-64.50
Solder	7.00*
Silicon	70.00*
Stainless Steel, 304	89.00
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	21.20-34.40‡
Tungsten: Carbon reduced, 98.8% min., minus 65 mesh	Dollars nom.**
Chromium electrolytic 99.8% Cr. min., metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore. ††Welding grade.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens: New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.68
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid; based on current ocean rates with any rise for buyer's acc't. Source of shipment: Western Europe)

	North Atlantic	Great Lakes	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.90	$5.95	$5.80	$5.65	$6.05
Bar Size Angles	5.95	6.00	5.85	5.75	6.10
Structural Angles	5.86	5.91	5.76	5.66	6.01
I-Beams	5.86	5.91	5.76	5.66	6.01
Channels	5.86	5.91	5.76	5.66	6.01
Plates (basic bessemer)	5.98	6.03	5.88	5.78	6.13
Sheets, Galvanized, 20 Ga., 36 in. x 96 in.	9.70	9.75	9.60	9.50	9.85
Sheets, Galv. (in coils) 20 Ga., 48 in. wide	9.60	9.65	9.50	9.40	9.75
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.08	24.20	24.42	24.15	25.47
Barbed Wire (†)	6.50	6.55	6.40	6.30	6.65
Merchant Bars	6.39	6.44	6.29	6.19	6.54
Hot-Rolled Bands	7.90	7.95	7.80	7.70	8.05
Wire Rods, Thomas Commercial No. 5	6.60	....	6.45	6.45	6.70
Wire Rods, O. H.	7.05	....	6.90	6.90	7.15
Bright Common Wire Nails (§)	7.80	7.85	7.50	7.60	7.95

†Per 82 lb net reel. §Per 100-lb keg. 20d nails and heavier.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.	
Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg.	5.00
Toluene, one deg. (deld. east of Rockies)	25.00
Cents per lb, f.o.b. tank cars or tank trucks, deld.	
Phenol, 90 per cent grade	14.75
Per net ton bulk, f.o.b. cars or trucks, plant.	
Ammonium sulfate, regular grade	$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, 10 lb pigs, per gross ton. Palmerton, Pa. 21-23% Mn, $102.50, 19-21% Mn, 1-3% Si, $100; 16-19% Mn, $98. For Neville Island Pa., prices add $2.50 as of Feb. 1. Lump 35 lb and down: Deduct $2 from 10 lb pig prices at Palmerton.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $220, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $228 per net ton, f.o.b. Anaconda, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 4c for max 0.15% C grade from above prices, 5.3c for max 0.03% C, 6.6c for max 0.5% C, and 8.1c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 24c per lb of contained Mn; packed, carload 25.3c, ton lot 26.9c, less ton 28.1c.

Electrolytic Manganese Metal: Min carload, bulk, 34.25c; 2000 lb to min carload, 37c; less ton, 39c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 11.6c per lb of alloy. Packed, c.l. 12.8c, ton 13.25c, less ton 14.25c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.3c from above prices. For 3% grade, Si 12.5-16% deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $250 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $255.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $300 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $305.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr. Delivered.

Charge Chrome: No. 1 (Cr 61-65%, C 5-7%, Si 5-8%), 22.00c.

Blocking Chrome: No. 1 (Cr 61-65%, C 5-7%, Si 5-8%), 22.00c; No. 2 (Cr 58-63%, C 5-6%, Si 8-10%), 23.00c; No. 3 (Cr 58-63%, C 5-6%, Si 10-12%), 23.00c.

Refined Charge Chrome: No. 1 (Cr 50-55%, C 5% max, Si 2% max), 25.00c; No. 2 (Cr 56-60% C 5% max, Si 2% max), 25.00c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 31.50c per lb contained Cr; 0.010% max, 32.50c. Delivered.
Cr 67-71%, carload, lump, bulk, 0.025% max, 34.50c; 0.05% max, 33.50c; 0.10% max, 33.25c; 0.20% max, 33.00c; 0.50% max, 32.75c; 1.0% max, 32.50c; 1.5% max, 32.25c; 2.0% max, 32.00c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). 8M x D, carload, bulk, 20.05c per lb of alloy carload packed, 21.25c, ton lot 22.50c, less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max, 26.25c per lb contained Cr and 14.60c per lb contained Si; Cr 33-36%, Si 45-48%, C 0.05% max, 28.25c per lb contained Cr, 14.60c per lb contained Si; 0.75 in. x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (C 99.8% min, metallic basis Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Keokuk, Iowa; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l., lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload, bulk, 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload, $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 13.7c per lb of briquet; c.l., packed, bags 14.9c; 3000 lb to c.l., pallets 14.9c; 2000 lb to c.l., bags 16.1c; less ton 17c. Delivered. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). C.l. bulk 14c per lb of briquet; c.l. packed, bags 15.2c; 3000 lb to c.l., pallets 15.2c; 2000 lb to c.l., bags 16.4c; less ton 17.3c. Delivered. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 4% max, C 0.1% max). Ton lots 2" x D, $3.45 per lb of contained Cb; less ton lots $3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 44-47% approx, Ta 15% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots, $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Carload, bulk 19.25c per lb of alloy, c.l. packed ½ in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (65-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.

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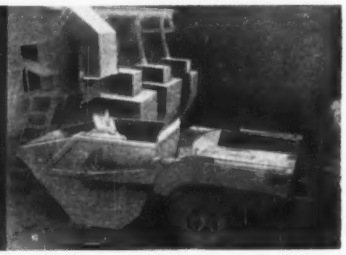

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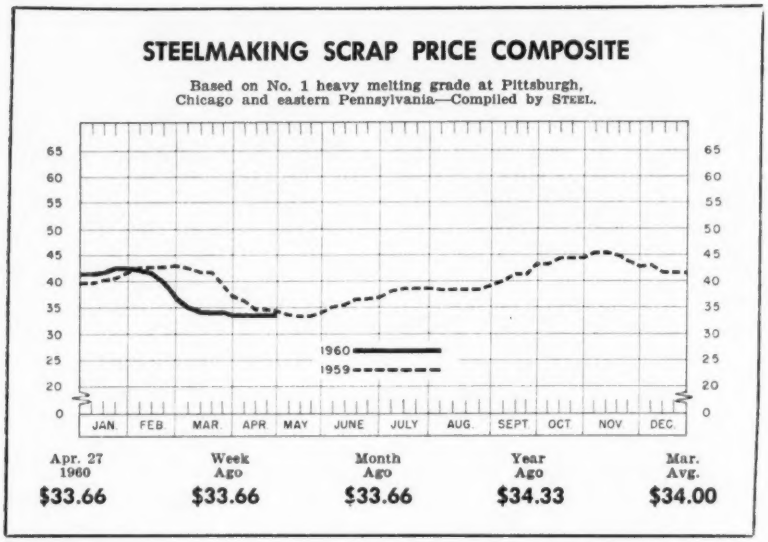


Auto Lists Key to Scrap Trend

STEEL's composite on No. 1 heavy melting unchanged at $33.66, but market tone is weak with domestic buying light. Outcome of industrial bids seen pointing way

Scrap Prices, Page 116

• **Chicago**—The market is on dead center, volumewise and pricewise. Dealer grades are not moving in sufficient quantity to provide a price test. The district steelmaking rate has dropped about 10 points in the last month, now standing at 85 per cent of capacity. A further decline is indicated.

An excess of blast furnace hot metal is reported. Present mill inventories of scrap are adequate for shrinking steel operations. The steady flow of industry scrap back to the mills from their customers on a contract basis eliminates the need for much dealer material.

Foundries are reducing their melting rates. They are buying less scrap as new orders for castings dip and their order backlogs shrink.

• **Pittsburgh**—Steelmakers are minimizing scrap consumption by using as much hot metal as possible in open hearths. Small lots of No. 2 bundles are beng bought at $27, delivered. Brokers think continued softening of the market is inevitable, although some grades may be on bottom now.

• **Philadelphia** — While domestic buying remains light, scrap prices are unchanged because of foreign shipments. The export movement in April was the best of the year at this port, and local piers are being reserved for additional cargoes. Most of the exports are to Japan, but some are being shipped to Sweden and Italy.

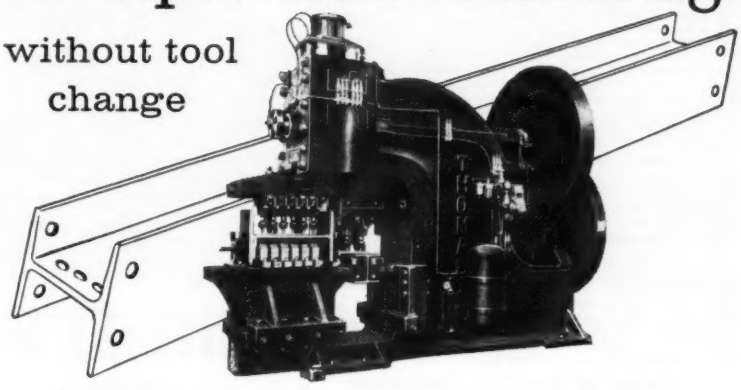
• **New York** — Domestic demand continues to dry up, and brokers have nominally reduced their buying prices on machine shop turnings to $7-$8; mixed borings and turnings to $8-$9; and short shoveling turnings to $9-$10. Stainless steel scrap specialties continue weak, with 18-8 clips, sheets, and solids off $5 to $180-$185, and type 430 down similarly to $70-$75. Good export demand is sustaining the market on the open hearth grades of scrap.

• **Boston**—Except for exports, steel scrap prices would be lower in tnis market. Domestic buying is light, but top grade No. 1 heavy melting steel is in limited supply. Other steelmaking grades are plentiful, and yard stocks are large. Foundries are buying cast material hand-to-mouth and are operating at only 75 to 80 per cent of capacity.

(*Please turn to Page* 121)

Multiple Beam Punching

without tool change



More holes . . . less material handling . . . fewer and easier tool changes! All these profit producers are yours with THOMAS Multiple Beam Punches. Built in four standard sizes, these machines reflect the fifty-year Thomas reputation for modern design, rugged construction and dependable service. And Thomas Spacing Tables may be added at any later date.

• *Write for complete information*

The trend is to Thomas

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 23, PA.

65

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Apr 27, 1960. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Apr. 27	$33.66
Apr. 20	33.66
Mar. Avg.	34.00
Apr. 1959	34.96
Apr. 1955	36.73

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	28.00-29.00
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	26.00-27.00
No. 1 busheling	34.00-35.00
No. 1 factory bundles	41.00-42.00
Machine shop turnings	16.00-17.00
Mixed borings, turnings	16.00-17.00
Short turnings	*22.00-23.00*
Cast iron borings	*22.00-23.00*
Cut structurals:	
2 ft and under	42.00-43.00
3 ft and under	41.00-42.00
Heavy turnings	*30.00-31.00*
Punchings & plate scrap	45.00-46.00
Electric furnace bundles	43.00-44.00

Cast Iron Grades

No. 1 cupola	*44.00-45.00*
Stove plate	46.00-47.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	47.00-48.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 2 ft and under	*58.00-59.00*
Rails, 18 in. and under	*59.00-60.00*
Random rails	52.00-53.00
Angles, splice bars	46.00-47.00
Railroad specialties	47.00-48.00
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	*215.00-220.00*
18-8 turnings	*115.00-120.00*
430 bundles & solids	*110.00-115.00*
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	32.00-33.00
No. 1 hvy melt., dealer	30.00-31.00
No. 2 hvy melting	28.00-29.00
No. 1 factory bundles	36.00-37.00
No. 1 dealer bundles	31.00-32.00
No. 2 bundles	20.00-21.00
No. 1 busheling, indus.	32.00-33.00
No. 1 busheling, dealer	30.00-31.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	17.00-18.00
Shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals, 3 ft	38.00-39.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	40.00-41.00
Unstripped motor blocks	39.00-40.00
Clean auto cast	53.00-54.00
Drop broken machinery	53.00-54.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
R.R. malleable	52.00-53.00
Rails, 2 ft and under	52.00-53.00
Rails, 18 in. and under	53.00-54.00
Angles, splice bars	45.00-46.00
Axles	51.00-52.00
Rails, rerolling	53.00-54.00

Stainless Steel Scrap

18-8 bundles, solids	*200.00-205.00*
18-8 turnings	110.00-115.00
430 bundles & solids	*105.00-110.00*
430 turnings	*50.00-55.00*

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	*15.00-16.00*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	*13.50-14.50*
No. 1 busheling	*26.00-27.00*
Machine shop turnings	*11.00-12.00*
Mixed borings, turnings	*10.00-11.00*
Shovel turnings	*9.00-10.00*

Cast Iron Grades

No. 1 cupola	*38.00-39.00*
Stove plate	*32.00-33.00*
Heavy breakable	*32.00-33.00*
Unstripped motor blocks	*24.00-25.00*
Charging box cast	*32.00-33.00*
Clean auto cast	*45.00-46.00*

CLEVELAND

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	*36.00-37.00*
No. 1 bundles	33.00-34.00
No. 2 bundles	20.00-21.00
No. 1 busheling	33.00-34.00
Machine shop turnings	12.00-13.00
Shovel turnings	16.00-17.00
Mixed borings, turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut foundry steel	35.00-36.00
Cut structurals, plate 2 ft and under	43.00-44.00
Low phos. punchings & plate	34.00-35.00
Alloy free, short shovel turnings	17.00-18.00
Electric furnace bundles	34.00-35.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Charging box cast	33.00-34.00
Heavy breakable cast	35.00-36.00
Stove plate	44.00-45.00
Unstripped motor blocks	35.00-36.00
Brake shoes	35.00-36.00
Clean auto cast	52.00-53.00
Burnt cast	42.00-43.00
Drop broken machinery	54.00-55.00

Railroad Scrap

R.R. malleable	49.00-50.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	42.00-43.00
No. 1 railroad cast	52.00-53.00
Railroad specialties	45.00-46.00
Angles, splice bars	45.00-46.00
Rails, rerolling	60.00-61.00

Stainless Steel Scrap (Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*195.00-200.00*
18-8 turnings	*95.00-100.00*
430 clips, bundles, solids	*100.00-105.00*
430 turnings	*30.00-40.00*

YOUNGSTOWN

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	27.00-28.00
No. 1 busheling	36.00-37.00
No. 1 bundles	36.00-37.00
No. 2 bundles	23.00-24.00
Machine shop turnings	15.00-16.00
Shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	37.00-38.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00

BUFFALO

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	30.00-31.00
No. 2 bundles	23.00-24.00
No. 1 busheling	30.00-31.00
Shovel turnings	21.00-22.00
Machine shop turnings	17.00-18.00
Cast iron borings	19.00-20.00
Low phos. structurals and plate, 2 ft and under	41.00-42.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*43.00-44.00*
No. 1 machinery	*48.00-49.00*

Railroad Scrap

Rails, random lengths	44.00-45.00
Rails, 3 ft and under	50.00-51.00
Railroad specialties	41.00-42.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	31.50-32.50
No. 2 heavy melting	26.00-27.00
No. 1 bundles	31.50-32.50
No. 2 bundles	21.00-22.00
No. 1 busheling	31.50-32.50
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Low phos. 18 in.	42.00-43.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Heavy breakable cast	36.00-37.00
Charging box cast	38.00-39.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 18 in. and under	54.00-55.00
Rails, random lengths	48.00-49.00

PHILADELPHIA

No. 1 heavy melting	35.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	22.00
No. 1 busheling	37.00
Electric furnace bundles	38.00
Mixed borings, turnings	19.00†
Shovel turnings	23.00†
Machine shop turnings	19.00†
Heavy turnings	29.00†
Structurals & plates	38.00-41.00
Couplers, springs, wheels	44.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	43.00
Drop broken machinery	51.00-52.00
Malleable	55.00-56.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	31.00-32.00
No. 2 bundles	16.00-17.00
Machine shop turnings	*7.00-8.00†*
Mixed borings, turnings	*8.00-9.00†*
Shovel turnings	*9.00-10.00†*
Low phos. structurals & plates	38.00-39.00

Cast Iron Grades

No. 1 cupola	37.00-38.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	*180.00-185.00*
18-8 borings, turnings	90.00-95.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	*70.00-75.00*

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 1 busheling	26.00-27.00
Machine shop turnings	6.00-7.00
Shovel turnings	11.00-12.00
No. 1 cast	39.00-40.00
Mixed cupola cast	33.00-34.00
No. 1 machinery cast	40.00-42.00

BIRMINGHAM

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	31.00-32.00
No. 2 bundles	20.00-21.00
No. 1 busheling	35.00-36.00
Cast iron borings	12.00-13.00
Machine shop turnings	21.00-22.00
Shovel turnings	22.00-23.00
Bar crops and plate	41.00-42.00
Structurals & plate	40.00-41.00
Electric furnace bundles	35.00-36.00
Electric furnace:	
3 ft and under	33.00-34.00
2 ft and under	34.00-35.00

Cast Iron Grades

No. 1 cupola	*49.00-50.00*
Stove plate	*49.00-50.00*
Charging box cast	29.00-30.00
Unstripped motor blocks	*39.00-40.00*
No. 1 wheels	40.00-41.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under	50.00-51.00
Rails, random lengths	45.00-46.00
Angles, splice bars	42.00-43.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	31.00
No. 1 bundles	33.00
No. 2 bundles	21.50
No. 1 busheling	33.00
Machine shop turnings	15.00
Shovel turnings	17.00

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	41.00†
Heavy breakable cast	40.00†
Unstripped motor blocks	39.00†
Clean auto cast	48.00
Stove plate	46.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00
Rails, random lengths	43.00
Rails, rerolling	54.00
Rails, 18 in. and under	46.00†
Angles, splice bars	44.00†

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 2 bundles	19.00
Machine shop turnings	13.00-13.50
Low phos. plate & Low phos. plate & structurals	38.00-39.00

Cast Iron Grades

No. 1 cupola	35.00
Heavy breakable	27.00†
Foundry malleable	31.00†
Unstripped motor blocks	31.00-32.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00†

LOS ANGELES

No. 1 heavy melting	33.00
No. 2 heavy melting	*30.00*
No. 1 bundles	*33.00*
No. 2 bundles	17.00
Machine shop turnings	16.00
Shovel turnings	16.00
Cast iron borings	16.00
Cut structurals and plate 1 ft and under	43.00

Cast Iron Grades

No. 1 cupola	*40.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	39.00

PORTLAND, OREG.

No. 1 heavy melting	33.00
No. 2 heavy melting	29.00
No. 1 bundles	29.00
No. 2 bundles	24.00
Shovel turnings	16.00
Electric furnace bundles	43.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable	26.00
Unstripped motor blocks	24.00
Stove plate	21.00

SEATTLE

(Prepared, f.o.b. car)

No. 1 heavy melting	32.00
No. 2 heavy melting	28.00
No. 1 bundles	28.00
No. 2 bundles	23.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Electric furnace No. 1	42.00

Cast Iron Grades

No. 1 cupola	30.00
Heavy breakable cast	25.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	20.00

SAN FRANCISCO

No. 1 heavy melting	34.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	20.00
Machine shop turnings	14.00
Mixed borings, turnings	14.00
Cast iron borings	14.00
Heavy turnings	14.00
Shovel turnings	14.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

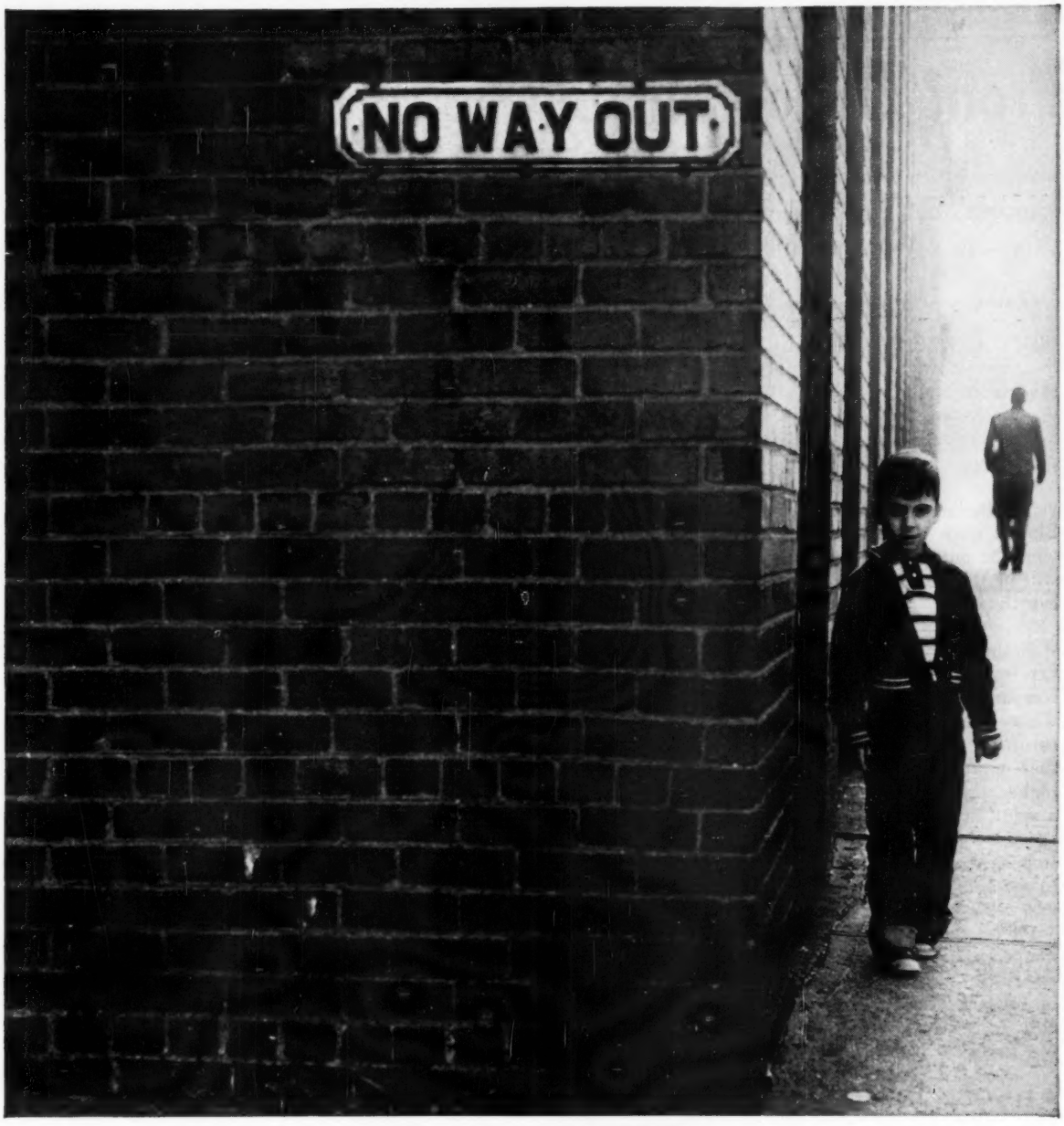
No. 1 heavy melting	32.25
No. 2 heavy melting	28.25
No. 1 bundles	32.25
No. 2 bundles	20.00
Mixed steel scrap	24.25
Mixed borings, turnings	13.00
Busheling, new factory:	
Prepared	32.25
Unprepared	26.25
Shovel turnings	17.00

Cast Iron Grades‡

No. 1 machinery cast	46.50-48.00

†Nominal.

‡F.o.b. Hamilton, Ont.



...OR IS THERE?

Leukemia now gives its young victims only months of life. But there *is* hope for those with this form of cancer. That hope is research.

Research has already extended the lives of many leukemia patients by months and even years. Research alone can find a way to stop this cancer of the blood-forming tissues once it has mysteriously begun. And every day that a leukemia patient lives allows science one more day to find a cure —or even a new way to extend his life a little longer.

Every year leukemia kills 2,000 children and 10,000 adults, and the incidence is rising. Every year the American Cancer Society allocates more and more money to research specifically related to leukemia. Last year, it allotted nearly $1,000,000 to such research, out of a total research expenditure of about $12,000,000. Much more money is needed this year. The more you contribute, the faster research on leukemia and other forms of cancer will progress. Guard your family! Fight cancer with a checkup and a check! Send your contribution to "Cancer," in care of your local post office.

AMERICAN CANCER SOCIETY

Profit Outlook Improving

Inventory workoffs and labor troubles mauled first quarter forecasts, but earnings stack up favorably with those of a year ago. Metalmen still expect good year

Nonferrous Metal Prices, Pages 120 & 121

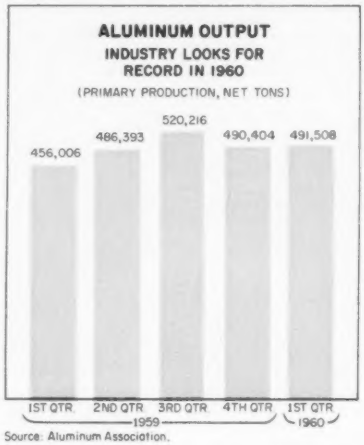
FIRST QUARTER statements of business activity and earnings show this pattern: Business hasn't lived up to forecasts and, in some cases, it has been considerably under expectations. Yet there's general agreement that 1960 will be a good year. Perhaps U. S. Steel's Roger Blough gave the majority opinion when he quipped last week: "This will be the best average year we've ever had."

• **Business Varied Sharply** — The first quarter saw some nonferrous companies posting better profits, while others had sharply reduced earnings. In general, companies that improved their positions credit higher prices (as in zinc, for example), a high rate of operations following the end of their own work stoppages, and stimulated sales due to a resumption of activity in steel and other consuming industries.

Firms that saw profits stagger blame strikes that carried over into the first quarter, customer reduction of inventories, and a business decline in certain key areas like housing starts.

• **Fabricators Hurt** — Perhaps the most disappointing showing has been on the mill product level. Bridgeport Brass Co. netted $1,093,251 compared with $2,154,638 in 1959's first quarter. Revere Copper & Brass Inc. had earnings of $2,196,116 vs. $2,491,375 in the similar period last year. Brass mill business is expected to pick up this quarter.

• **Strikes Hurt Copper** — Labor troubles, which carried over into the first quarter, ate into copper company earnings. Phelps Dodge Corp., unable to resume normal operations until late March, saw its income plunge to $4,750,000 from the $13,107,000 figure posted in the first quarter of 1959. Kennecott Copper Corp., whose labor problems extended into February, saw first quarter shipments decline from 136,300 tons in the first three months of 1959 to 120,300 tons in this year's first quarter. Result: First quarter income of $18,201,372 compared with $22,396,392 in the corresponding period of last year.



Source: Aluminum Association.

Earnings would have been lower if it hadn't been for higher copper prices and an exceptionally strong demand overseas (stimulated in part by fears of strikes at African and Chilean mines).

• **Aluminum Does Well** — Aluminum sales forecasts took a shellacking in the first quarter, but earnings were pretty good. The best percentage showing was made by Kaiser Aluminum & Chemical Corp., which posted a net of $7,297,000 compared with $4,206,000 in the year-ago period. "Earnings . . . were favorably affected by an increase in the aluminum price . . . and by completion of a contract calling for shipments of bauxite to government stockpile," says President D. A. Rhoades.

Aluminum Co. of America's president, Frank L. Magee, reported first quarter earnings of $12,635,046 vs. $10,725,430 in the like period of 1959, a gain of 18 per cent. He now forecasts a 10 per cent rise in aluminum consumption this year and a lesser hike of 5 to 7 per cent in Alcoa's tonnage sales, considerably under earlier expectations. The main reason new orders will fall short of 1960 consumption: Users are working off inventories built up last year as a hedge against a strike which didn't materialize, says Mr. Magee.

Net for Reynolds Metals Co. dropped to $6,050,000 from $11,880,000 last year. President R. S. Reynolds Jr., says sales are on the upswing. He foresees a 10 per cent gain over 1959.

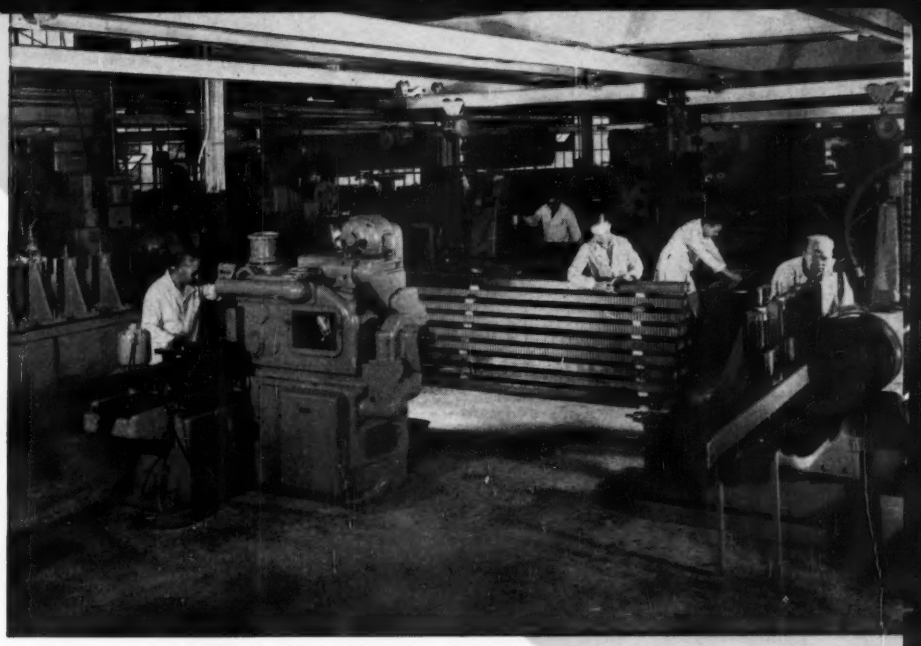
• **So Does Nickel**—Dr. John F. Thompson, chairman of International Nickel Co. of Canada Ltd., reports that first quarter earnings are expected to be "significantly higher" than those for the year-ago period. Cause: Heavy buying following the steel strike.

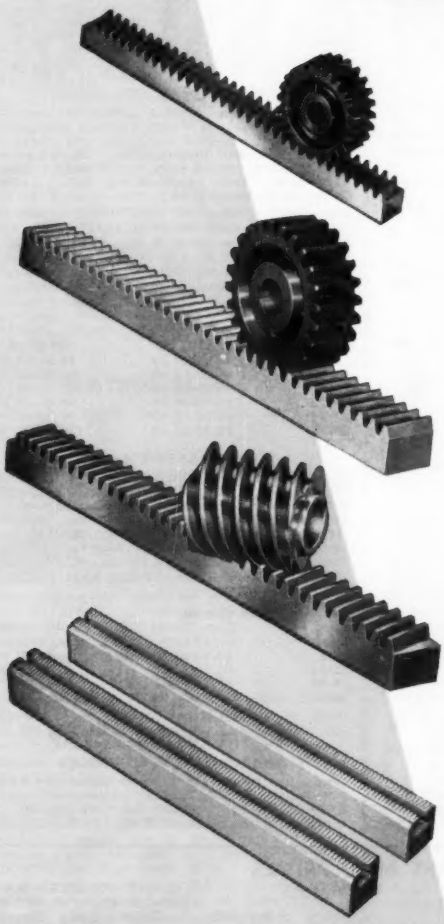
NONFERROUS PRICE RECORD

	Apr. 27 Price	Last Change	Previous Price	Mar. Avg	Feb. Avg	Apr., 1959 Avg
Aluminum	26.00	Dec. 17, 1959	24.70	26.000	26.000	24.700
Copper	33.00	Mar. 10, 1960	33.00–35.00	33.296	34.000	32.404
Lead	11.80	Dec. 21, 1959	12.30	11.800	11.800	10.992
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	99.25	Apr. 27, 1960	99.375	100.227	101.170	102.490
Zinc	13.00	Jan. 8, 1960	12.50	13.000	13.000	11.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. customer custody; MAGNESIUM, pig, 99.8%, Velasco, Tex.

GEAR RACKS





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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 30,000 lb or more, f.o.b. customer custody.

Aluminum Alloy: No. 13, 25.60; No. 43, 25.90; No. 195, 30.70; No. 214, 31.50; No. 356, 26.30, 30 lb ingots; 10 lb ingots, add 0.4 cent per lb; 6 lb ingots, add 0.6 cent per lb.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 25.00-26.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $65 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.50 per lb deld.

Cobalt: 99+%, $1.50 per lb for 500-lb keg, $1.52 per lb for 100 lb case; $1.57 per lb under 100 lb.

Columbium: Powder, $55-85 per lb nom.

Copper: Electrolytic, 33.00 deld.; custom smelters, **33.00; lake, 33.00** deld.; fire refined, 32.75 deld.

Germanium: First reduction, ingots, less than 1 kg, **36.00-37.50 per** gram; 1-10 kg, **30.50-32.00 per gram; 10 kg** or more, 28.10-29.99 per gram; **intrinsic grade**, under 10 kg, 31.95 per gram; 10 kg or more, 29.95 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 per troy oz nom.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis, New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 50 lb, $11 per lb f.o.b. Minneapolis; 50-99 lb, $10; 100-499 lb, $9.50; 500 lb or more, $9 per lb, delivered.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex., 1.3 in. diam. x 12 in. sticks, 57.00 f.o.b. Madison, Ill.

Magnesium Alloy: AZ91A (diecasting), 40.75; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $213-215 per 75 lb flask.

Molybdenum: Unalloyed forging billets, 4.125-7.0 in. diam., 50-4999 lb, $8.15-11.50 per lb, depending on quantity; 5000 lb or more, $8 per lb, f.o.b. Coldwater, Mich.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, in kegs, 74.50; "F" nickel, 5 lb ingots, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. ports of entry, contained nickel, 69.60.

Osmium: $70-90 per troy oz nom.

Palladium: $24-26 per troy oz.

Platinum: $82-85 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $137-140 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Melting stock, $35 per lb; rod, $60 per lb nom; sheet, $55 per lb nom.

Tellurium: $3.00 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 99.25.

Titanium: Sponge, 99.3+% grade A-1, ductile (0.3% Fe max.), $1.60 per lb; grade A-2 (0.5% Fe max.), $1.50 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.50-4.25.

Zinc: Prime western, 13.00; brass special, 13.25; intermediate, 13.00, East St. Louis, freight allowed over 0.50 per lb., New York basis, add 0.50. High grade, 14.50; special high grade, 14.75 deld. Diecasting alloy ingot No. 3, 16.50; No. 2, 17.00; No. 5, 16.75 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $8 per lb; 100-500 lb, $7 per lb; over 500 lb, $6.50 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 27.25-29.00; No. 12 foundry alloy (No. 2 grade), 25.00-25.25; 5% silicon alloy, 0.60 Cu max., 25.50-25.75; 13 alloy, 0.60 Cu max., 25.50-26.00; 195 alloy, 27.75-28.75; 108 alloy, 25.25-25.75. **Steel deoxidizing grades**, notch bars, granulated or shot: Grade 1, 25.50; grade 2, 24.25; grade 3, 23.25; grade 4, 22.75.

Brass Ingot: Red brass, No. 115, 29.25; tin bronze, No. 225, 39.50; No. 245, 34.00; high-leaded tin bronze, No. 305, 33.75; No. 1 yellow, No. 405, 23.75; manganese bronze, No. 421, 28.25.

Magnesium Alloy Ingot: A63A, 37.50; AZ91B, 37.25; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) **Strip**, $1.975, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.955, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 38.35; l.c.l., 38.98. Weatherproof, 20,000-lb lots, 38.55; l.c.l., 39.30.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $6.75-15.50; sheared mill plate, $5.25-9.00; wire, $5.55-9.50; forging billets, $3.20-4.75; hot-rolled and forged bars, $4.00-6.25.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 28.00; ribbon zinc in coils, 22.50; plates, 21.50.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	138	120	138
Strip, C.R.	124	108	138
Plate, H.R.	130	110	126
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

(Selected products and sizes)

Flat Sheets: 1100, 3003, and 5005, mill finish, 30,000 lb base, f.o.b. customer custody.

Thickness Range (in.)	Widths (in.)	Length Range (in.)	Price Range
0.250-0.136	24-72	72-180	45.10-47.70
0.136-0.096	24-72	72-180	45.50-48.70
0.096-0.077	24-72	72-180	46.20-50.00
0.077-0.068	24-72	72-180	46.70-51.70
0.068-0.061	24-72	72-180	46.70-55.50
0.061-0.048	24-72	72-180	47.30-57.30
0.048-0.038	24-72	72-180	47.80-60.20
0.038-0.030	24-72	72-180	48.20-65.30
0.030-0.024	24-60	72-180	48.70-56.60
0.024-0.019	24-60	72-180	49.40-59.90
0.019-0.017	24-48	72-144	50.30-57.00
0.017-0.015	24-48	72-144	51.20-58.00
0.015-0.014	24-36	72-144	52.30
0.014-0.012	24-36	72-144	53.50
0.012-0.011	24-36	72-144	54.60
0.011-0.0095	24-36	72-144	56.20
0.0095-0.0085	24-36	72-96	57.50
0.0085-0.0075	24-36	72-96	59.20
0.0075-0.007	24-36	72-96	60.80
0.007-0.006	24-36	72-96	62.50

ALUMINUM (continued)

Plates and Circles: Thickness, 0.25-3 in.; width or diam., 24-60 in.; lengths, 72-240 in., mill finish.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	44.60	49.40
5050-F	45.70	50.50
3004-F	46.70	52.40
5052-F	47.30	53.10
6061-T6	47.80	53.90
2024-T4	51.80	58.90
7075-T6*	60.50	67.90

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base, 12 ft

Diam. (in.)*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	72.90	75.80	....	....
0.188	....	....	....	78.20
0.250	58.00	61.60	70.70	72.30
0.375	57.20	62.40	69.00	70.50
	2011-T3	2017-T451	2011-T3	2017-T451
0.500	57.20	62.40	69.00	70.50
0.625	57.20	62.40	65.80	66.60
0.750	55.70	60.70	59.60	62.60
0.875	55.70	60.70	59.60	62.60
1.000	55.70	60.70	59.60	62.60
1.125	53.30	58.30	57.50	60.40
1.250	53.30	58.30	57.50	60.40
1.375	53.30	58.30	57.50	60.40
1.500	53.30	58.30	57.50	60.40
1.625	51.00	55.60	....	58.20
1.750	51.00	55.60	56.30	58.20
1.875	51.00	55.60	....	58.20
2.000	51.00	55.60	56.30	58.20
2.250	49.50	54.00	....	58.20
2.500	49.50	54.00	....	58.20
2.750	47.90	52.20	....	58.20
3.000	47.90	52.20	....	58.20
3.250	....	52.20	....	....
3.375	....	52.20	....	....

*Selected sizes

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 47.20-56.90; 6061, 43.20-56.90; 7075, 61.50-71.20; 7079, 66.50-76.20.

Pipe: ASA schedule 40, alloy 6063-T6, 3-40 ft lengths, plain ends, 90,000 lb base, dollars per ft. Nominal pipe sizes: 1 in., 31.55; 1¼ in., 42.75; 1½ in., 51.05; 2 in., 61.70; 3 in., 123.40; 4 in., 169.55; 5 in., 229.60; 6 in., 304.60; 8 in., 458.40; 10 in., 706.45 (3-24 ft lengths).

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
1-14	44.70-46.20	53.20-59.00
15-17	44.70-46.20	55.60-60.80
18-23	45.20-46.80	57.70-66.40
24-32	45.20-46.80	65.60-78.80
33-38	48.80-51.40	82.30-93.40
39-44	58.70-62.40	99.90-121.00

MAGNESIUM

Sheets and Plates: AZ31B standard grade, .032 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-3.00 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	94.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-68.40	90.60-91.30
36-38	71.50-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 23.50-24.00; No. 2 heavy copper and wire, 20.75-21.25; light copper, 18.75-19.25; No. 1 composition red brass, 17.25-17.75; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	SCRAP ALLOWANCES e (Based on copper at 30.00c) Clean Heavy	Rod Ends	Clean Turnings
Copper	50.00b	54.86c	....	58.32	29.000	29.000	28.250
Yellow Brass	50.57	36.06d	50.86	54.23	22.250	21.250	20.250
Low Brass, 80%	53.53	53.22	53.82	57.09	24.750	24.500	24.000
Red Brass, 85%	54.58	54.27	54.87	58.14	25.750	25.500	25.000
Com. Bronze, 90%	56.17	55.86	56.46	59.48	26.750	26.500	26.000
Manganese Bronze	58.86	52.21	62.69	....	20.875	26.625	19.875
Muntz Metal	53.20	48.26	....	....	20.875	20.625	20.125
Naval Brass	55.12	48 68	61.43	58.78	20.750	20.500	20.000
Silicon Bronze	62.86	61.80	62.15	80.79	28.375	28.125	27.375
Nickel Silver, 10%	65.98	68.06	68.06	....	26.875	26.625	14.937
Phos. Bronze	77.44	78.19	77.69	79.37	29.875	29.625	28.625

a. Cents per lb, f.o.b. mill; freight allowed on 50 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.75-16.25; new brass clippings, 14.50-15.00; light brass, 11.00-11.50; heavy yellow brass, 12.00-12.50; new brass rod ends, 12.50-12.75; auto radiators, unsweated, 13.00-13.50; cocks and faucets, 13.50-14.00; brass pipe, 14.00-14.50.

Lead: Soft scrap lead, 8.00-8.25; battery plates, 3.00-3.25; linotype and stereotype, 9.00-9.50; electrotype, 8.00-8.25; mixed babbitt, 9.00-9.50.

Monel: Clippings, 27.00-28.00; old sheets, 23.00-24.00; turnings, 20.00-22.00; rods, 27.00-28.00.

Nickel: Sheets and clips, 53.00-54.00; rolled anodes, 53.00-54.00; turnings, 41.00-42.00; rod ends, 53.00-54.00.

Zinc: Old zinc, 3.25-3.75; new diecast scrap, 4.00-4.50; old diecast scrap, 2.25-2.75.

Aluminum: Old castings and sheets, 11.50-11.75; clean borings and turnings, 7.25-7.50; segregated low copper clips, 14.50-15.00; segregated high copper clips, 12.50-13.00; mixed low copper clips, 14.00-14.50; mixed high copper clips, 12.50-13.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 12.50-13.00; clean borings and turnings, 9.00-9.50; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.50-15.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.75-12.00; clean borings and turnings, 10.50-11.00; segregated low copper clips, 15.50-16.00; segregated high copper clips, 14.50-15.00; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.00-14.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)
Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 59.00; light scrap, 54.00; turnings and borings, 39.00.
Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 24.00; light copper, 22.00; refinery brass (60% copper) dry copper content, 22.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 27.00; No. 2 heavy copper and wire, 24.00; light copper, 22.00; No. 1 composition borings, 20.50; No. 1 composition solids, 21.00; heavy yellow brass solids, 15.25; yellow brass turnings, 14.00; radiators, 16.50.
(F.o.b. shipping point, freight allowed on quantities)

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.50.

Copper: Flat-rolled, 50.04; oval, 48.00, 5000-10,000 lb, electrodeposited, 42.00, 2000-5000 lb lots; cast, 44.50, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 1000 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 117.50; 200-499 lb, 116.00; 500-999 lb, 115.50; 1000 lb or more, 115.00.

Zinc: Balls, 20.50; flat tops, 20.50; flats, 23.25; ovals, 22.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.50 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,000 lb, 61.90.

Copper Sulphate: 100-1900 lb, 16.00; 2000-5900 lb, 14.00; 6000-11,900 lb, 13.75; 12,000-22,900 lb, 13.50; 23,000 lb or more, 13.00.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,900 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 23.80; 400-800 lb, 20.80; 1000-4900 lb, 19.80; 5000-19,900 lb, 18.80; 20,000 lb or more, 17.60.

Sodium Stannate: Less than 100 lb, 78.00; 100-600 lb, 68.80; 700-1900 lb, 66.00; 2000-9900 lb, 64.10; 10,000 lb or more, 62.80.

Stannous Chloride (Anhydrous): 25 lb, 153.20; 100 lb, 148.30; 400 lb, 145.90; 800-19,900 lb, 105.00; 20,000 lb or more, 98.90.

Stannous Sulphate: Less than 50 lb, 138.40; 50 lb, 108.40; 100-1900 lb, 106.40; 2000 lb or more, 104.40.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 115*)

• **Cleveland**—The market is quiet, but prices still are headed downward. Outcome of bidding on the automotive lists will determine the trend of the market over the next month. Early bids on the lists indicated prices may be off $2 a ton from a month ago. Little mill buying is being done. One Valley steelmaker is reported to have paid $37 for some No. 1 heavy melting, which is around the level prevailing in that area the last several weeks.

• **Detroit**—Auto list bids reflect the sluggish market. The outlook is for list prices $2 to $3 a ton below those made a month ago. The tonnage will fall under that at the start of April. Area dealers think bids will be down about $2 from the previous sale, similar to a decline reported in the Cleveland market.

• **Buffalo**—Cast iron scrap is weaker. A leading consumer bought cupola material at $44, off $22 from the last purchase. The price of No. 1 machinery cast is lower in sympathy with the drop on the cupola grade.

There has been no change in steel scrap prices, but the market undertone is steady. Dealers expect the mills to buy modest tonnages this month at around prevailing price levels. Dealers' receipts are light due to low offering prices.

• **Cincinnati**—Prices are unchanged on dealer lists, but the tone of the market is weaker. Area mill purchases in May are expected to be smaller than they were in April. Brokers are quoting No. 1 heavy melting at $31.50-$32.50.

• **Birmingham** — Activity in cast scrap increased last week; all grades, except No. 1 wheels, rose $1 a ton. Wheel prices, while unchanged, are strong. Major open hearth and electric furnace scrap buyers indicate they will re-enter the market this month.

• **Houston**—A local mill purchased limited tonnage for May and June delivery. No turnings will be needed before August. The Lone Star mill also is expected to make light buys.

CLASSIFIED

BLADE STEEL BUYER

METALLURGICAL BACKGROUND

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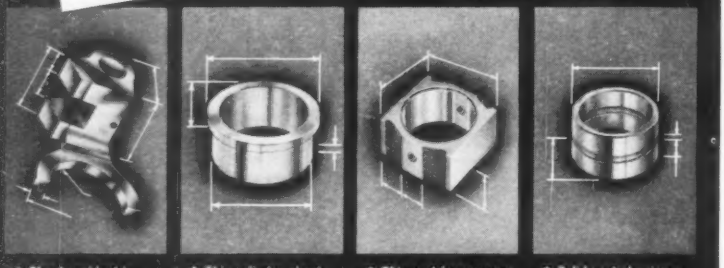

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*This cylinder gland bearing made of Bunting Bearing Aluminum is an example of how to save weight and money on the cost of large, thick-wall bearings and parts.

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Some upturn in exports is noted. Demand has improved at New Orleans, Baton Rouge, La., and Beaumont, Tex.

In some cases, shippers on export account are receiving $36.50 f.a.s. for No. 1 heavy melting, up $1.50 from a week ago. At Houston, export buying is rising, and mill brokers are having difficulty competing with exporters' offering.

Eagle Pass (Tex.), a terminal point for Mexican bound scrap, raised steel scrap prices slightly, paying truckers $33.60 a gross ton for No. 1 heavy melting and $30.24 for No. 2 heavy melting.

• **Los Angeles**—Prices are steady, except for No. 1 bundles which are being quoted at $33, the same as No. 1 heavy melting.

• **San Francisco**—Steel scrap is moving to the mills at a slow rate. Expectations are that one of the big local consumers will be out of the market throughout May.

• **Seattle**—The scrap market here is weak. Sales are limited, and yard operations are slow. Not much material is being generated. No early change in the market is indicated.

Big Shear Speeds Cutting Of Cars at Luntz Yard

A 600 ton scrap cutting shear that will process 300 to 350 tons of metal daily has been placed in operation by Luntz Iron & Steel Co. at its Warren, Ohio, yard. It cost about $300,000.

T. D. Brennan, district manager, said the shear will enable the yard to step up the cutting of old railroad cars from 15 to 25 a day. The company recently bought 3400 old cars from the Pennsylvania Railroad. It has processed about 350 steam locomotives since World War II.

Tin Plate . . .

Tin Plate Prices, Page 108

The big period for tin plate buying should be just ahead. Canmakers will be busy the next several months producing the containers needed for the summer's food pack. Heavy can shipments should continue through September.

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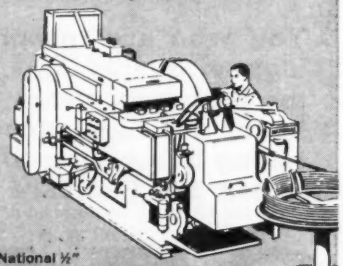
These important parts are cold-formed from coiled wire, start to finish in compact, efficient National Cold Headers.

Three are formed with no scrap loss. Two are ready to use! All five achieve remarkable savings over past methods.

If you make odd-shaped parts, may we help you evaluate them for cold-forming from wire? Better yet, come to Tiffin, witness our demonstrations and let's discuss your work.



National ½"
Five-Station Progressive Cold Header

NATIONAL MACHINERY CO.
TIFFIN, OHIO, U.S.A.
HARTFORD DETROIT CHICAGO

You who are responsible for the purchase of tubular goods are assured highest quality and product reliability when you specify Standard. Over the past forty years Standard has supplied countless miles of electric weld boiler and heat exchanger, pressure and mechanical tubing and oil country tubing and casing to chemical plants, refineries and industries around the world. Let Standard specialists analyze your problem—quote on your job.

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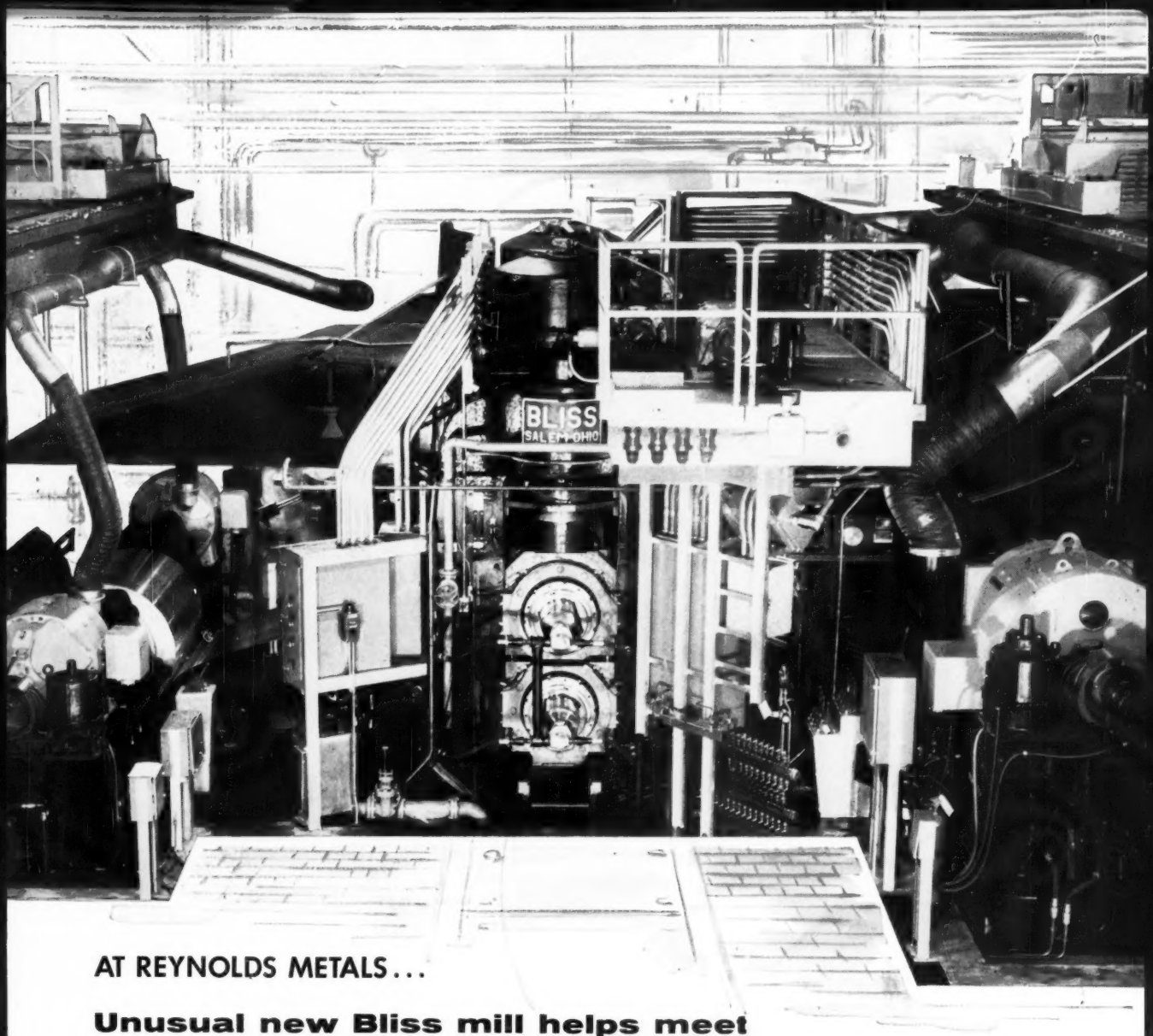
THE STANDARD TUBE COMPANY • 24400 PLYMOUTH ROAD, DETROIT 39, MICHIGAN

Welded stainless tubing and pipe • Welded carbon steel mechanical • Boiler and Heat Exchanger • Exclusive rigidized patterns • Special Shapes • Oil Well Tubing and Casing • Light Weight Pipe • Steel Tubing—Sizes: ½" OD to 6" OD—.028 to .270 wall • Stainless Pipe and Tubing—Sizes ¼" OD to 4¾" OD—.020 to .187 wall.



AT REYNOLDS METALS...

Unusual new Bliss mill helps meet growing demand for bright aluminum strip

First of its kind to be installed by Reynolds Metals Company for sheet operations, this new Bliss two-high cold reduction mill recently went into operation at Reynolds' Alloys Plant, near Sheffield, Ala.

A 66-inch mill capable of speeds up to 1000 fpm and reductions as high as 50%, the new mill has been especially designed for rolling bright aluminum strip, now being used in increasing quantities for both decorative and structural applications by the automotive, aeronautical, trailer and other industries.

Among the unusual design features built into the mill by Bliss' Rolling Mill Division are a continuous line flow coolant filtration system and a special heating arrangement that maintains the proper shape of the rolls. Electronic controls provide gage consistency in high speed acceleration and deceleration, as well as permitting the operator to detect difficulties at any point in the rolling operation from his position at the control panel.

According to Reynolds Metals, the new Bliss mill is part of a $65,000,000 expansion and modernization program now going on at the Alloys Plant.

For more examples of Bliss rolling mill and accessory equipment currently in use in both ferrous and nonferrous rolling plants, write us today for your complimentary copy of our new 84-page Rolling Mill Brochure, Bulletin 40-B.

BLISS
SINCE 1857 ®

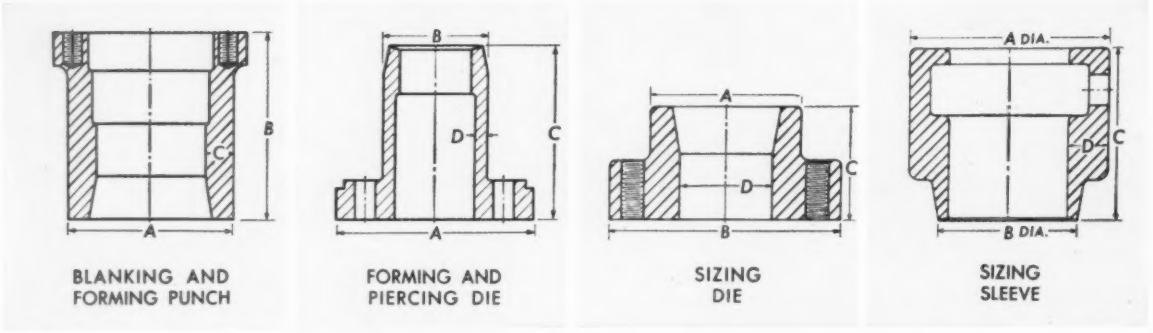
Bliss is more than a name . . . it's a guarantee

E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

THIS HOLE IN GRAPH-MO HOLLOW-BAR®

lets you make ring-shaped tool steel parts faster, at less cost



BLANKING AND FORMING PUNCH

FORMING AND PIERCING DIE

SIZING DIE

SIZING SLEEVE

START making your ring-shaped tool steel parts with Graph-Mo Hollow-Bar® and you save one operation immediately. You eliminate drilling because the hole is already there. Your first step is finish boring.

That's just the start of your savings. You can make parts faster because Graph-Mo machines 30% faster than ordinary tool steels. The free graphite in its structure is the reason.

Graph-Mo wears longer because of the diamond-hard carbides in its structure. Users report Graph-Mo outwears conventional tool steels by 3 to 1. And there's far less tendency to pick up, scuff and gall.

And for stability, you can't beat Graph-Mo anywhere. A master plug gage machined from Graph-Mo showed less than 10 millionths of an inch dimensional change *after 12 years of use.*

For your ring-shaped parts, save as other tool makers do. Specify Graph-Mo Hollow-Bar. It will save you time and money, give you better finished products. Sizes range from 2 to 16-inch O.D. Many wall thicknesses. Write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

WHEN YOU BUY TIMKEN STEEL YOU GET . . .

1. Quality that's uniform from heat to heat, bar to bar, order to order
2. Service from the experts in specialty steel
3. Over 40 years experience in solving tough steel problems

TIMKEN® *Fine Alloy* STEEL

"TIMKEN GRAPHITIC STEELS ARE CARRIED IN STOCK BY 9 DISTRIBUTORS WITH 42 WAREHOUSES IN 31 CITIES IN THE UNITED STATES AND CANADA"